17014

GAZETTEER

OF

UPPER BURMA

AND THE

SHAN STATES.

IN FIVE VOLUMES.

COMPILED FROM OFFICIAL PAPERS BY

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PART I.—VOL. II.

RANGOON:

PRINTED BY THE SUPERINTENDENT, GOVERNMENT PRINTING, BURMA.

1900.

ILLUSTRATIONS.

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ERRATA.

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Page 4, line 13, *for* 'headmen' *read* 'bedesmen.'
" 9, " 7, " 'diffured' " 'differed.'
" 20, " 4, " 'grate' " 'great.'
" 21, " 20, " 'freed' " 'forced.'
" 26, " 17, " 'viking' " 'vikingr.'
" 28, " 27, " 'angles' " 'angels.'
" 28, " 27, the quotation marks should come after 'fiends' *not after* 'oft.'
" 29, " 4, *for* 'worships' *read* 'worship.'
" 36, " 20, " 'Ronnald' " 'Remuald.'
" 38, " 18, *read* 'is' present.
" 57, last line, *for* ပုဒ်ယေရှုင်ဆီ *read* ပုဒ်ယေရှုင်ဆီ.
" 61, line 10, " 'sevice' *read* 'service.'
" 92, " 14, " 'marriage' " 'homage.'
" 96, " 9 from bottom, *dele* second men.
" 135, " 5, *for* ဓထွယ် *read* ဓလွယ်.
" 136, " 22, " 'Mawra' *read* 'Nawra.'
" 142, " 25, " 'parwas' " 'parwar.'
" 149, " 21, " 'mahdā mada' " 'mahā madda.'
" 169, " 3, " 'further' " 'farther.'
" 176, " 25, " 'fittully' " 'fitfully.'
" 178, " 8 from bottom, *for* 'kamboya' *read* 'kamboja.'
" 178, " 5, " " 'katā' " 'kalā.'
" 218, " 21, *for* 'information' *read* 'formation.'
" 298, " 7 from bottom, *for* 'there' *read* 'these.'
" 432, " 3, *for* 'with' *read* 'within.'
" 439, " 27, " 'streched' " 'stretched.'
" 441, " 9 from bottom, *for* 'seal' *read* 'still.'
" 452, " 2, *for* 'extenon' *read* 'extension.'
" 492, " 3, " 'where' " 'were.'
" 513, " 9, " 'invidual' " 'individual.'
" 516, " 22, " 'strengthining' " 'strengthening.'

THE

UPPER BURMA GAZETTEER.

CHAPTER X.

RELIGION AND ITS SEMBLANCES.

THE nominal religion of nine-tenths of the population of Upper Burma is Buddhism. It is the fashion now-a-days to say that Buddhism is not a religion at all, but a system of philosophy, or a code of morality. As a religion it has been discussed in the *British Burma Gazetteer*, to which the present compilation is a supplement, and nothing need therefore be added here. The whole of the population of Upper Burma and all that of the Shan States, except the hill tribes, is returned as Buddhist. The Chins, Kachins, and other hill men are labelled *nat* worshippers. Since, however, a system of philosophy hardly satisfies the hopes and fears of human nature, it is not surprising to find that animistic religion prevails side by side with Buddhism and not only has a great hold on the people, but was formally recognized by the Burmese Court. Before treating of this, however, the indisputable influence of the monks and their attitude after the annexation, merits some notice, since it exhibits Buddhism in its attitude towards the administration of the country. The bulk of what follows is adapted from papers by Mr. Taw Sein Ko. The Buddhist monks had very considerable influence under the Burmese Government. The highest rank was given to them for the first few days after they passed the *Patamabyan* examination, held annually in June at the foot of Mandalay Hill. Valuable rewards usually accompanied this temporary rank and, when they died at any age beyond the ordinary, the grandest of obsequies were given to their remains at the cost of the State. It was an axiom that no monk could utter a falsehood, and his word therefore was universally respected and accepted as true. He had access to the King and the Ministers at all times, and those of the higher grades received specially stamped leaves to enable them to correspond with the Court. They could and did exercise their influence in various ways. Sometimes a person ordered out for execution obtained his life and a pardon on their intercession; they were occasionally the only check on the tyranny

and extortion of powerful officials; they obtained remission of taxes for the people in times of scarcity and disaster, or temporary relief when there was a local failure of crops; very often it was only through the monks that men imprisoned, for offences which no one remembered, for a term which never had been fixed, could obtain release. Thus under the Burmese Government the *pôngyi*, who theoretically had nothing to do with politics, or things of this world, was really a political power, the only permanent power in a system where office was liable to be as transient and evanescent as the hues of the rainbow or the tints of the dying dolphin.

He could, as Mr. Taw Sein Ko says, report on the conduct of officials, criticise their methods of government, have them removed or transferred, if necessary, and offer suggestions for the amelioration of the condition of the people; and his representation always received attention at the hands of the Government; sometimes the acts of Government were modified through his representations. In 1220 B. E. (1859) King Mindôn confiscated all private lands in the Mandalay district and gave them to the soldiery. The *pôngyis* represented to him the hardship which this was to the people and the order of confiscation was cancelled. Again in 1234 B. E. (1873) the *si-sa* lands held in the Meiktila and other districts by the troopers of the Shwepyi Yanaung regiment were resumed by Government. The order for this resumption was abrogated at the instance of the monks of the district.

The taking of life near all monasteries is forbidden. The *pôngyis* in various places succeeded in getting the destruction of life forbidden in wider areas, the boundaries of which were strictly defined. Saving the life of a human being was a still more obvious duty for a monk, and there are several instances given in which the King granted a reprieve on the intercession of a *Sadaw*. The Pagan King was probably the solitary instance in all Burmese history of a deposed King surviving his overthrow and living for many years after it, not in the sanctuary of a monastery but actually in the capital of his supplanter, and the fact that he was allowed to live was due to King Mindôn's firm belief that he was the head of religion even more than ruler of the State. Thus the *pôngyi* was a power in the Government of the country, a power constituted and fostered so as to place a salutary check on the tyranny and oppression of officials on the one hand, and to reconcile the people to the existing form of government on the other. It was in tacit recognition of such services that the *pôngyi* received from the State a monthly subsistence allowance, usually in the form of rice, but sometimes in money, which was, of course, handed over to the *kappiya*, or lay manciple of the *kyaung*. In addition to this the

monk's relatives were exempted from taxation, and he had also the privilege of being amenable to the jurisdiction of the ecclesiastical courts only, in all matters, even in those in which laymen were parties in the case. His monastery was a sanctuary and offered a safe asylum to all offenders against law and justice, provided they assumed the yellow robe. In many cases also the monastery was a place where valuable property might be deposited in troublous and dangerous times. In addition to this, of course, the monk was a social power, as he is wherever Buddhism prevails, whatever the form of government. He was the guardian of religion, the depositary of learning, the instructor of the young, the spiritual adviser of the elderly and aged. His opinions even in secular matters were always accepted with respect and sometimes largely sought for; he was in fact the self-constituted protector of his flock, on whose behalf he was privileged to intercede with the temporal authorities. He was also cited as the best possible witness in all important transactions such as the signing of wills, the transference of lands, and the closing of mortgages.

With such privileges accorded to the monks, one can quite believe the estimate of Mr. Taw Sein Ko that under Burmese rule three per cent. of the population of Upper Burma, including the Cis-Salween Shan States, were *pôngyis*, and that in Mandalay itself there were 13,227 members of the order, or about eight per cent. of the total population.

Although, strictly speaking, it is contrary to the theory of the founder of the sacred order, which declared that there was no superiority in rank, but only superiority in piety and length of observation of the vows, a hierarchy was established to regulate the conduct of the monks.

At the head was the *Thathanabaing*, who may be called the Grand Superior of the order. He is usually styled the Archbishop, but the name seems as misleading as the title of priest, which is usually applied to the *pôngyi*. The name of monk seems to fit the Buddhist man of religion better than that of priest, which implies a ritual and regular spiritual services. The *Thathanabaing* was appointed by the King and was invested with supreme authority in all matters of dogma, as well as of ecclesiastical polity. He was assisted by a council, or *Thudama* (*Sudhama*) of learned *Sadaws*, who varied in number from eight to twelve, and who assumed the full power of the superior of the order, in his absence, or when the post was vacant. The majority of the *Sadaws* were appointed by the King, and those so appointed were styled *Taseit-ya sayadaw* (teachers who have the seal).

A *Mahādan Wun*, or ecclesiastical censor, was under the orders of the *Thathanabaing*, and the *Wut-mye Wun*, the Manager of *Wuttakan* or pagoda lands and Governor of pagoda slaves, was also instructed by the Superior-General of the order.

The whole country was divided into ecclesiastical jurisdictions or dioceses, if the word be thought convenient, and each of these was placed under a *gaing-gyôk*. Each *gaing-gyôk* had under him a number of *gaing-ôks*, each of whom again was assisted by a number of *gaing-dauks*. All ecclesiastical disputes in the dioceses were settled by the Provincial superiors, or Bishops, and an appeal lay from their decisions to the *Thudama* or Consistory of *Sayadaws* in Mandalay.

As has been already noted, the influence of the headmen was very commonly exerted in civil, criminal, and revenue matters, though this interference in purely secular matters is directly opposed to the doctrines laid down by Gaudama Buddha for the guidance of the mendicants. As the power was exerted in Upper Burma, however, good nearly always resulted. The simple *pôngyi*, the head of a single monastery, the prior, if the correspondence with the monastic orders is to be maintained, might exert his influence in all cases which were not offences against the State, and so might even the *upasin*, the ordinary friar, not presiding over a *kyaung*, or the *maung-yin*, the novitiant. Within their spiritual jurisdiction they could procure the mitigation of punishments, or could have a case compromised, usually by lecturing the parties and getting a written guarantee from the offenders that they would keep the peace and abstain from wrong-doing. In civil cases, especially in those of inheritance, the *pôngyi's* settlement was that most frequently sought for, and the terms were usually reduced to writing in a memorandum noting the heads of the settlement and signed by the parties.

When the people of a district or township refused to pay revenue, or arrears of taxes, the local *gaing-gyôk* or *gaing-ôk*, the abbot or prior, or in important cases some influential *Sayadaw*, was commonly asked to speak to them on behalf of the Government, and his intervention was usually successful. A *Sadaw* of eminence had always the power to have a case, pending before the temporal courts, transferred to him for settlement. The monks thus held the balance between the ruler and the ruled.

The Burmese Government, however, reserved to itself the right of punishing any offence which affected its own stability, or was contrary to the public good. Thus beyond the four *parazika*, or cardinal sins, the commission of which imply immediate expulsion from

the Order—fornication, theft of property worth five rupees or more, murder, and false arrogation of supernatural powers—the following offences brought about the immediate intervention of the civil authorities :—

(*a*) Participation in a conspiracy of some prince, or rebel.
(*b*) Harbouring bad characters.
(*c*) Admission to the monastery as novice, or monk, of men who have evaded punishment, unless this were with the approval of their guardians and of the secular authorities.
(*d*) The practice of alchemy, sorcery, astrology, medicine, tattooing, and the distribution of love-charms and talismans against wounds of whatever kind.

To keep the Order acquainted with public affairs and the state of the country, the Burmese Government supplied the heads of *taiks* and *kyaungs*, priories and monasteries, with copies of all royal orders, acts, rules, and the like. The Mahādan Wun also was required to submit to the *Thudama*, or Consistory of *Sadaws*, registers of all novices and monks resident in the country, with particulars as to their place of birth, the names of their parents, their lay and conventual names, the books they studied or taught, and all other particulars of a like kind. Reports as to the arrival or movement of monks were submitted direct by the *Sadaws*, and in all such matters the ecclesiastical censor and his staff were required to exercise a strict supervision.

Monks charged with an offence against the state were tried by the *Thudama Sadaws* and were unfrocked and handed over to the civil authorities, if found guilty. The civil authorities then tried them according to the ordinary law. Mr. Taw Sein Ko gives the following instances:—About the year 1866 a monk called U Cho was suspected of being connected with a plot in favour of some prince, probably the Myingôn and Myingôndaing. U Cho disobeyed an order to remain within the palace stockade and was arrested and sent before the *Thudama*. By the Consistory he was disrobed and was eventually deported by the regular magistrates to Mogaung.

In the year 1880 a monk called U Keikti entered the palace in the morning with eight attendants. He was found to have a layman's clothes and a *dha* in his possession. On his trial he was sentenced by the Ministers, with the concurrence of the Consistory of *Sadaws*, to be deported to Male in the Shwebo district. The Yanaung Mintha, however, had him put to death in prison. It may be noted that monks convicted of treason, after taking off the yellow robe, had to wear a suit of white.

Buddhist religious institutions are of three kinds—pagodas, monasteries, and clerical libraries, in which Buddhist texts and commentaries are preserved. To each class of institution Burman kings made endowments of land and appointed certain families as caretakers. The gift was usually recorded in *Kyauk-sa* or lithic inscriptions. These endowments and the families assigned to the monasteries were under the control of the Mahādan Wun, while those of pagodas were supervised by the Wutmye Wun. The right of collecting revenue from lands belonging to pagodas was farmed out and granted to the highest bidder, who was generally a headman of pagoda slaves, as at Pagan; and such revenue, as well as the *thathameda* tax, derived from the families attached to *kyaungs* and pagodas, who were looked upon as outcasts from society, were not appropriated for the use of the State, but put aside at the treasury and expended by the *Hlut-daw* in repairing monasteries and shrines, and in paying the salaries of the manciples of such religious institutions. The lands with which *kyaungs* were endowed were not extensive, and the revenue from them was disposed of by the *Sadaw*, under whose control they were placed. The following examples of the *Kyauk-sa*, recording the endowments of pagodas, may be taken as typical of all these documents. There is a great collection of them in the enclosure and curtilege of the Arakan Pagoda, Mahā Munī, in Mandalay. The originals are or ought to be at the pagodas themselves, but many have been lost and still more defaced by age :—

Record of the Wuttakan lands of the Shwe-Indein Zedi (ရွှေအင်းတိန်စေတီ)

The Shwe-Indein Zedi, (ရွှေအင်းတိန်စေတီ) built by King Dhamma-Thaw-Ka (ဓမ္မာသောကမင်း) in Inlêywa, (အင်းလေးရွာ) was renewed by King Nawrahta (နော်ရထာမင်း) in the year two hundred of Religion (343 B.C.), and he, in addition, dedicated a piece of glebe land, besides devoting the families of rebels as pagoda slaves to the service of the pagoda. This pagoda was subsequently removed by Narapati Sithumingyi (နရပတိစည်သူမင်းကြီး), Mohnyin Mintayagyi (မိုးညှင်းမင်းတရားကြီး), Minyè-kyawzwa Mingaung (မင်းရဲကျော်စွာမင်းခေါင်), and Sinbyushin-min (ဆင်ဖြူရှင်မင်း), and is bounded on the east by Kyawkpyun Ye-twet (ကျောက်ပြွန်ရေထွက်), Naukkan In (နောက်ကံအင်း), and Sinthègôn (ဆင်သေကုန်း); on the south-east by Thayet Maung Hnitma (သရက်မောင်နှမ); on the south by Kan-kaukywahaung-chaung (ကံကောက်ရွာဟောင်းချောင်း); on the south-west by Chaung-chaukgyi Pyaswè hills (ချောင်းချောက်ကြီးပျားစွဲ တောင်။); on the west by Sin-yôk Nyaung Sin (ဆင်ရုပ်ညောင်စင်) water-fall; on the north-west by the Sittaung Taung-kamauk (စစ်တောင်းတောင်ခမောက်), and the Yathe Taung-kôk (ရသေ့တောင်ကုဋ်) hills; on the north by the Nat-thami (နတ်သမီး) and the Wèlu

tamma (တေလှတ္တ) hills; and on the north-east by Inyebyin-kaukchan (အင်းရေပြင်ကောက်ချန်). The land is exempted from dues of every kind. The above is the later wording of the inscription on the stone erected by the Great-grandfather, the Mintayagyi (မင်းတရားကြီး) in the year 1147 B.E. (1785 A.D.).

Wuttakan lands of the Shwe-Zigôn Zedi (ရွှေစည်းခုံစေတီ) *at Pagān.*

The piece of glebe land dedicated by Sīthumingyi (စည်သူမင်းကြီး) is bounded on the east by Bawdigôn (ဗောဓိကုန်း); on the south by Myingan Nyaungbin (မြင်းခြံညောင်ပင်), near Mingala Tèdaw (မင်္ဂလာတဲတော်); on the west by Bilu-tet-chaung (ဘီလူးတက်ချောင်း), below Anawk-myit (အနောက်မြစ်); and on the north by the Irrawaddy (ဧရာဝတီ) river, and is estimated to contain 700 square *tas* (တာ). The *Wun* (ဝန်) in charge enjoys the revenue derived.

During the reign of Mintayagyi (မင်းတရားကြီး) in Zeyapura Sagaing (ဇေယျပူရ စစ်ကိုင်း) there arose a dispute as to the name (whether Shwe-seyakôn or Shwe-zikôn) of the pagoda and its glebe land between Sithu (စည်သူ) and his household, and this finally reached the ears of Mintayagyi (မင်းတရားကြီး), who ordered resort to be made to the ordeal of diving in the river (whoever rose first to the surface lost) to decide the question. Sithu (စည်သူ) failed in the contest and the case was accordingly decided in favour of his men. This took place on the 14th waxing of the month of *Tawthalin* of 1124 B.E. (September 1762).

During the reign of Sinbyushin Mintayagyi (ဆင်ဖြူရှင်မင်းတရားကြီး) in Ratanapura awamyo (ရတနာပူရအဝမြို့), a similar dispute arose between the Nyaung-u Thugyi (ညောင်ဦးသူကြီး) and his men. The case was referred to Bonsantu Hlut Sayadaw (ဗုံစံတုလွှတ်ဆရာတော်) who, in like manner, decided the case against the thugyi on the 13th waning of the month of *Kasôn* (ကဆုန်) of 1134 B.E. (May 1772).

The above is the later wording of the inscription on the stone as erected by Bodaw Paya of the golden city of Amarapura (အမရပူရ) in the year 1147 B.E. (1785).

Since the relations between the Burmese Government and the Buddhist monks were such as have been described it is not surprising that the mendicants played a considerable part in the disturbances which accompanied and followed the annexation of Upper Burma. The most conspicuous instance was perhaps the rebellion of the Mayanchaung *pôngyi*, when it became clear that there would be war with Upper Burma. A Shan, who had been wearing the yellow robe for some time in a monastery at Mayanchaung, a small Shan village in the Shwegyin district of Lower Burma, made his

way to Mandalay and obtained an order from the Taingda Mingyi to create a diversion in Lower Burma in favour of the king. He returned and obtained the support of the Shan *pôngyis* of Shwele and Kyaukkalat, and gathered a large following round him in the Shwegyin district. He proclaimed himself King Thibaw's agent, arrogated the title of "Mayanchaung generalissimo," and offered large rewards for the heads of white soldiers and sepoys. His influence was increased by the power which he claimed to possess, of conferring invulnerability by certain mystic tattoo marks; and he further inflamed the popular mind by representing the British as bent upon subverting the national religion. On the 15th December 1885 a detachment of from eighty to a hundred men under the Kyaukkalat *pôngyi* attacked Winpadaw and Sittang police guards, overpowered them, killed several policemen, and obtained a considerable supply of arms. After this the monk-leaders joined forces and such was the prestige that their preaching and successes had gained for them, that on the 16th December 1885 their following had swelled to between eight hundred and a thousand men. The fighting element of this force was composed entirely of Shans, who were simple dacoits. Whatever the pretensions of the leaders may have been the men took no pains to conceal that their object was loot. The Burmese peasantry were treated with great cruelty; but the bad characters from amongst themselves joined the Shans and, though they were too cowardly to afford much help to the rebel leaders in the fighting that followed, they did not hesitate to take advantage of the prevailing confusion and rushed in wherever a chance of pillage was offered. The Mayanchaung sent one detachment against Kyaikto under a *pôngyi* of Petkaleik, another was sent against Bilin, while a third was detached to raise a revolt in the Pegu district. The Mayanchaung *pôngyi* himself with the main body made a desperate assault on Shwegyin town on the 19th December. He was defeated and driven off with heavy loss. The Kyaukkalat *pôngyi's* detachment of the rebel force had, the day before, been routed and dispersed in an encounter with the Pegu police at Myitkyo. The Kyaikto and Bilin parties met with some success, but were driven off as soon as troops arrived from Moulmein. The ramifications of the rebellion embraced the whole of the Shwegyin district and portions of Amherst, Salween, Taungngu, and Pegu. It was widespread in its effect and commenced a period of totally unexpected disorder in Lower Burma. The *pôngyi* himself, after many vicissitudes, was captured by the Christian Bghai-Karens on the 10th March 1886, starving in a refuge in the Taungngu hills. He was publicly hanged in front of the Kyaikto police-station, and many of his followers were captured and punished,

but some remained at large for many months and plundered and killed until they were hunted down.

This rising cannot be attributed to monkish discontent. It was arranged for before Mandalay was occupied, and there is good ground for believing that it was really what the leaders professed it to be, a political diversion in favour of the Burmese Government. In this respect it differred from the plots and risings which took place after the annexation, and it gives an excellent example of the use made of the sacred order by the Burmese Government.

Another monk who gave even greater trouble was Ôktama. He commenced his rising in February 1886 in the Lègaing township, on the banks of the Môn river, in the Minbu district. The post of Sagu, held by a British force, was attacked and burnt by a band of from five to six hundred, under the leadership of Ôktama. From this time till his capture in July 1889, Ôktama continued to be one of the most troublesome opponents of the British Government in Upper Burma. In March 1886 he unsuccessfully besieged Salin with over three thousand men, and also fomented serious trouble in Sale. The north part of Minbu district was completely in his hands for many months and his influence was practically supreme in that part of the country till towards the close of 1888. He had a powerful organization of lesser chiefs, among whom he parcelled out the country into fiefs. A systematic method of pillage was adopted throughout the disaffected tract and the robbers for long enjoyed comparative immunity owing to the impassable nature of the wild forest country and the deadly malaria of the climate. Ôktama's rule extended almost without check from the foot of the Arakan Yomas up to the river Irrawaddy. He assumed the title of Mingyi, or Great Minister of State, and had his *Atwinwun* or Secretary. His chief Lieutenants were Byainggyi and Ôktaya, the latter, like himself, a monk who had thrown aside the yellow robe. This powerful organization yielded in the cold weather of 1888-89 to a system of incessant and vigilant patrolling, coupled with continued fines on the villages which harboured and assisted the rebels. In July 1889 Ôktama was captured, convicted, and hanged, shortly after Ôktaya and Byainggyi had met the same fate. Numerous stories were from time to time afloat concerning the origin and motive of Ôktama's rebellion. The following version of the matter is extracted from a letter written by a Mandalay *pôngyi* to a brother monk in Tavoy shortly after the rising:—

"A column of *kala* troops went up to Sagu and took up their "quarters in a monastery. The abbot was sweeping, when the "*kalas* were exasperated with him for raising the dust, which annoy-"ed them, so they slapped the *pôngyi* on the face. The holy man,

"saying to himself that so long as the country was under the rule "of the ignorant, wicked, and animal-like *kalas*, he would never "remain in the priesthood, doffed his robe, collected five hundred of "his able-bodied disciples, and killed all the six hundred men com- "posing the column." This is an absurd invention. Ôktama himself, when on trial, alleged that in February 1886 he paid a visit to the camp of the Myinzaing Prince and obtained a commission from him to fight the British. This may or may not have been true, but it at any rate shows the relations between Church and State under the Burma rule.

Another monk, who was conspicuous in several plots and risings against the British Government after the annexation and who is still at large, was U Parama. He was a Danu (Burmese-Shan *métis*) by race, and a native of Möng Yai, the capital of the Shan State of South Hsen Wi (Theinni). He came to Mandalay and was received by the *Thathanabaing*, who appointed him *gaingôk* or superior of the Hsi Paw (Thibaw) dependency Hsum Hsai (Thônzè). There he joined the following of the Myinzaing Prince, a son of Mindôn Min, and when the rebellion collapsed on the death of the young Prince, Parama became an ardent supporter of the Limbin confederacy. The Limbin Prince, who lavished titular distinctions with a free hand during his short-lived career as a pretender, created U Parama *Thathanabaing* of the Shan States. When the Limbin surrendered at Möng Nai in May 1887, U Parama made his way to Kēngtūng, and thence, after failing to get the *Sawbwa* of that State to oppose the British Government, moved north to throw in his lot with Saw Yan Naing, another pretender, who since 1890 has been living in seclusion in the Shan-Chinese States of the Têng Yüeh prefecture. U Parama affords an example of affection for the State rather than for the Church, for a letter was sent to him from the *Thathanabaing* in Mandalay advising him to be reconciled with the British Government.

U Rewata and U Einda were two other intriguing monks, who did not, however, take up arms. They were supporters of the Myinzaing Prince, and U Rewata sent a letter to the abbot of the golden monastery in Henzada for the purpose of inflaming the minds of the people of Lower Burma against the British. This was shortly after the annexation. Two years afterwards, when the monastery of another seditious monk, U Sandima, was searched at Tavoy, a letter of exactly similar import was found addressed to him by the same U Rewata of the Megawadi monastery, Mandalay. U Rewata and his fellow conspirator U Einda were arrested and confined. Such monks, in their way, created more trouble than the Burmese Government, unassisted, could have compassed.

In the course of the investigations which led to the arrest of U Rewata and U Einda information was gained that a "fat, fair, stout "*pôngyi* with a harsh voice" from Yandoon in Lower Burma had paid a visit to U Rewata's monastery, the Megawadi in Mandalay, and, in aid of U Rewata's schemes, had undertaken to overthrow the British power at Yandoon, Pantanaw, and Ma-ubin. This intelligence was communicated to the District Officers, who succeeded in identifying the fat, fair, stout *pôngyi* with U Thumana (whose lay name was Nga Tôk) of the Min monastery in Yandoon. Further enquiry showed that U Thumana was a native of Shwebo in Upper Burma and that he had been settled in Yandoon for many years. Apart from his visit to Mandalay and his connection with U Rewata, it was proved that U Thumana was concerned in criminal conspiracies in Lower Burma. One of the disciples of the Min *kyaung*, like the head *pôngyi*, a native of Shwebo, had, in February 1887, raised a band of dacoits and attacked a police guard in the Thôngwa district, more than twenty others connected with the *kyaung* had been engaged in dacoities and had met with various fates, some of them being shot in encounters with the police, others hanged, and others transported. The confessions of his disciples who were brought to trial indicated that U Thumana was intimately concerned in their performances; and papers found, when the *kyaung* was searched, proved that his designs were not confined to the direction of petty dacoity, but that he really aimed at the subversion of the Government. U Thumana was therefore detained in gaol.

When Mandalay was occupied by the British troops, the two sons of the Metkaya Prince, afterwards known by the name of the Chaunggwa Princes, were prisoners in the palace. The elder Prince, named Maung Po Yôn, was then about nineteen years of age and the younger, Maung Bien or Pyen, about twelve. These Princes were released with the other State prisoners. They remained some days in Mandalay and visited during that time the Modi *Sadaw*, who had known their father. Then they made their way to Chaung-gwa in the Ava district, where Maung Yôn became known under the name of Saw Yan Naing and Maung Bien as Saw Yan Paing. They collected a large number of men, who, after fighting for many months against the British troops, were eventually scattered. About the end of October 1886, Prince Saw Yan Naing came to Mandalay with a few followers, amongst whom was one of the Mayanchaung *pôngyis*, with some of his men. A plot was formed to seize the town in the name of the Prince; several meetings took place at the Eindawya pagoda, south of B road; the parts to be taken by the different conspirators in attacking the town were allotted; two royal seals, bearing a *galôn* (a fabulous bird) crest, emblematic of the day

of the week on which Saw Yan Naing was born, were prepared and a Brahmin (*Pônna*) astrologer was consulted regarding the probable issue of the conspiracy. The astrologer drew the horoscopes of the two Princes and declared that the stars did not favour the elder Prince, but were auspicious to his brother. He advised that the elder Prince should travel about, otherwise misfortunes would befall him. The courage of the Prince and his adherents then failed them, and Saw Yan Naing, with about ten followers, started north, passing through Kabaing, Madaya, Yenatha, and Zethit to Kainggyi in the Shan feudatory State of Möng Lōng, where he halted and sent letters to the Myoza, begging him to befriend him. He received an evasive answer advising him to take refuge in the territory of a more powerful Chief. On the advice of the Mayanchaung *pôngyi*, the Prince pushed on to Kalagwè, where the Myoza was staying, but the Chief would not see him and requested him to go on to Lôngan, about two miles from Kalagwè. There the Prince was stricken with fever, and on the 1st January 1887 he was lying at Lôngan almost dying of fever and privations and abandoned by most of his starving followers, but he recovered and is still at large in Chinese territory.

On the 8th January 1887, the younger Prince, who had separated from his brother when their following was broken up, was brought to Mandalay by Bo Pan and entrusted to the care of the Modi *Sadaw*. On the day the young Prince arrived the Modi monastery took fire in the middle of the day, and the fire, spreading to the south quarter of the town, burnt over 300 houses. It is believed that the *pôngyis* themselves set fire to the monastery and that they attributed the fire to the supernatural power of the young Prince. Preparations were immediately made to call the Prince's adherents together, and on the 15th January messengers were sent out from the *Zingyaing*, a small monastic building used as a covered walk by the *pôngyis*, to the followers of the Prince in the different parts of the town to invite them to attend at the Modi monastery on the 16th January. Many of those invited failed to attend on that day and the meeting was adjourned to the 18th January. On that day the conspirators begin to assemble shortly after nine in the morning, and about midday they were all present in the small monastery. The adherents of the Prince were assembled in the centre room with the *pôngyis*, whilst the *Sadaw* sat in a small room adjoining, and only separated from the conspiraters by a low bamboo partition. As the supporters of the Prince came in they made obeisance to the *Sadaw* and were then directed to go into the next room. As soon as they had all assembled the young Prince was introduced and seated next one of the monks. Another of the *pôngyis* had in his hand a book

containing a list of the conspirators. A charmed image, said to be bullet-proof, and the favourable horoscope were handed round to the assembly and plans for the attack of the town were vaguely discussed. One of the *pôngyis* was to seize the east quarter of the town with Kywetnapa and Tamôkso men; an *ex*-thugyi was to take possession of the Residency; the Prince's adherents round the Arakan pagoda were to occupy the west quarter of the town; an *ex*-official at the head of the king's soldiery, still living in the city, was to surprise the north gate of the city. The conspirators whilst discussing these plans were at the same time taking the oath of allegiance to the young Prince. An image of Gaudama, made of the wood of the sacred tree at Buddhagya was dipped in a jar of water and each conspirator drank a cupful of the water, while he repeated the words of the oath:—"If I fail in my allegiance to the young "Prince or swerve from it, may I die by the cut of a sword, or the "thrust of a spear."

About half the conspirators had taken the oath when the monastery was rushed by a body of Burman police under Inspector Maung Ni, supported by the *Taunghmu* of the west quarter, with 14 townsmen. Twenty-three persons, including the Prince, the *Sadaw*, and six *pôngyis*, were arrested; five conspirators made their escape, one of whom was caught very soon afterwards. The same day four other persons were arrested as being implicated in the plot. In the monastery the police found the list of conspirators torn up and thrown behind a post, the horoscope of the Princes, the charmed image and the jar containing the sacred water. A further search led to the discovery of the royal stamp hidden in the gutter of the roof. The Modi *Sadaw* (whose lay name was Maung Tha Dun) and 19 others were sentenced to transportation for life for the part taken in this conspiracy.

U Sandima was much less directly connected with the Tavoy rising of February—May 1888. He was the abbot of a popular and much frequented monastery within three miles of Tavoy town and was early acquainted with the rebel plans and helped to carry them out. When troops arrived from Rangoon he sent tidings to the rebel camp and enabled the leaders to fall back in good time into the jungle and thus escape a direct collision with a superior force. It was even said that the Shan Prince who headed the rising was a pupil or disciple of U Sandima. The monk was arrested and, when his monastery was searched, a box of treasonable documents was found, which indicated that U Sandima was ill-disposed towards the Government and had been in correspondence with notoriously disloyal persons in Upper Burma, among them the U Rewata referred to above. He had also made himself a medium for disse-

minating false and treasonable intelligence regarding the course of affairs in Upper Burma. He was detained in gaol for some time, and after trial in 1889 was set free and went back to live in Tavoy. U Sandima like U Thumana was a native of Shwebo in Upper Burma and had been settled in Lower Burma for more than twenty years. He contented himself with scheming, but another Tavoy monk, Tha Dun, of Kadoseik village, five miles farther up the river, threw aside the yellow robe after the murder of the Nabulè *Myoôk* and constituted himself the *Mingala Bo* or chief lieutenant of the Sindo Prince. He remained with the rebels until they were finally repulsed in their second attack on Nabulè on May 27th, 1888. Tha Dun then like the rest fled across the frontier, where he was captured by a party of Siamese troops and sent back with twenty others to Tavoy. Most of his companions were transported, and he as the leader was hanged.

Another Upper Burman monk, who had been living for some three years, under the name of U Thuriya, at a monastery in Mayinkaing village near Gyobingauk, planned, in June 1888, a general rising of the country bordering the railway line from Paungdè to Tharrawaddy. He gave out that he was acting under the authority of the Myingun Prince, and an inflammatory proclamation was prepared declaring that the object of the movement was the expulsion of the *Meissa Deitti Kala*, the heretical foreigners, from the land and the restoration of the Burmese dynasty. The leaders of several dacoit gangs which had been disturbing the peace of the district for many months were enlisted in support of the *pôngyi's* undertaking. On the 1st July he threw off the yellow robe, marched with about one hundred followers to Kayinbôn on the railway line and there cut the telegraph wire and tore up the rails. The rebels then went on to the south, but they were met and dispersed by a Burman Myoôk with a party of police. Two of the rebels were killed in the encounter, the mail train was saved from being derailed, and the monk and his followers were immediately pursued. Of the latter eighty-four were arrested, but U Thuriya disappeared and was never captured.

In August of the same year 1888, information was received that a rising headed by a son of the Pakhan prince, King Mindôn's brother, was to take place on the 25th of the month in Mandalay. The conspirators were to meet at the Eindawya pagoda in B road and the Etkabat monastery near D road. Bo To, the dacoit leader on the Irrawaddy islands, was to land men in Mandalay who were to seize the arms kept in the court-houses, march on the city, and overpower the guards at the city and palace gates. The *Sadaw* of the monastery was U Dhamma Thami, commonly known as the Tabayin *Sadaw*, and he was the moving spirit of the conspiracy. The two

meeting places were watched, but the *Sadaw* got the alarm somehow. The prince and some of his followers were arrested as they left the monastery, and the police coming up immediately afterwards seized forty-three inside the *kyaung*, thirteen of whom were *pôngyis*. The prince was weakminded and was merely used as a rallying name for the disaffected. The *Sadaw* got clear away.

The persistence of the monks led to a conspiracy even in Arakan. In February 1889 at Sandoway an ex-*pôngyi* named Po Lu and a blind monk, who was an expert in conferring invulnerability by tattooing, led an ill-armed rabble of from sixty to eighty men, with torches and beat of drum, into Sandoway town on the night of Sunday, the 10th February. They killed only one man, a Burman clerk, who came drunk out of a toddy-shop as they entered the town, but they set fire to a house and the fire spread to the Government buildings. They were met by the Indian police under an Inspector. The two leaders were killed and the rebels driven across the Sandoway creek with a loss of eight others killed and three wounded and captured. The remainder fled up the Sandoway creek to the hills. They were mostly ignorant country folk from distant jungles, with a few Chins from the hills. Two other *pôngyis*, natives of Upper Burma, seem to have been connected with this rising. One was the abbot of the Theingôn *kyaung* in Sandoway and the other the head of the Minbya *kyaung*. They both suddenly disappeared before the outbreak and were not afterwards heard of. Here as in other cases the monkish leaders called upon the people to revolt and join them in the name of religion and nationality. The ex-*pôngyi*, Po Lu, declared himself of royal descent and claimed the kingdom, but this was only a part of the machinery of the rising. The monks were at the bottom of it and were doubtless inspired by the disaffected in Mandalay through the agency of itinerant mendicants.

The most recent instance of monkish interference in affairs of State occurred in October 1897, when a monk U Kelatha, with eighteen followers, made a mad attack on Fort Dufferin, which was immediately overcome by a handful of British officers, but not before a private of the Royal Scots had been mortally wounded. The object of the monk, who professed to be an incarnation of the Setkya Prince, was to seat himself on the throne and proclaim himself King of Burma.

Buddhism is the most tolerant of religions, but such aspirations, and especially such actions, are in flagrant opposition to its most fundamental rules and tenets. If the monks were true brethren of the sacred order, they would have no hand in such secular matters, and, if the people acted up to the theory of Buddhism, they would

recognize that religion and questions of worldly power are things apart.

The explanation of such inconsistencies is to be found in the fact that Buddhism as the religion of the people is merely the outward label. The more powerful faith is that of Shamanism, the religion of the ancient Hungarians and of most of the North Asiatic tribes, and possibly the earliest of all religions, as it is certainly the most obvious.

Spirit worship.

The question has been discussed at some length by Mr. H. L. Eales in his Report on the Census of Burma for 1891. He says: "It is from fear of displeasing the *nats* that the Burman ordinarily "does one thing or refrains from doing another. Bishop Bigandet, "to whose criticism the view now advanced has been submitted, has "not only endorsed this opinion, but has gone even further, and "I feel I cannot conclude this topic better than by quoting the "opinion with which he has favoured me on the Buddhism of the "Burman:—

"The Buddhism of the people forms little or no part of their daily life. The hold that Buddhism has is the hold that a cold, somewhat cynical theosophical system has over the imagination and sentiments of the better educated amongst the people. This hold, and the influence the *pôngyis* exert, is created and strengthened by political and chiefly social ties. Every boy must go to a monastic school and wear the yellow robe He thus becomes 'free' of the faith and is early taught to look favourably on its professors, but in his every-day life, from the day of his birth to his marriage, and even when he lies on his death-bed, all the rites and forms that he observes are to be traced to animistic and not to Buddhist sources. If calamity overtakes him, he considers it to be the work of his *nats*, and, when he wishes to commence any important undertaking, he propitiates these *nats*, who are the direct representatives of the old animistic worship. Even the *pôngyis* themselves are often directly influenced by the strong under-current of animistic religion, which underlies their faith in Buddhism. This dual worship, which is still more clearly marked in China, is the explanation of the very slight connection between State and society on the one hand and religion on the other which is so noticeable in Burma."

No one, not even Sangermano, knew the Burmese better than the venerable Bishop and, if this was his opinion after half a century of work among them, it does not seem necessary to do more than to give instances of the worship and to discuss what the nature of the primitive religion was, whether Shamanism or Fetichism, abstract or concrete. It is at any rate quite certain that the traces of *nat*-worship which are obvious enough in Lower Burma become much more pronounced in the upper territory. Certain feasts were formally recognized by the Burmese Court and Ministers of State, and even the King and Chief attended them in their official capacity, while the ritual to be observed is carefully set forth in the Lawka

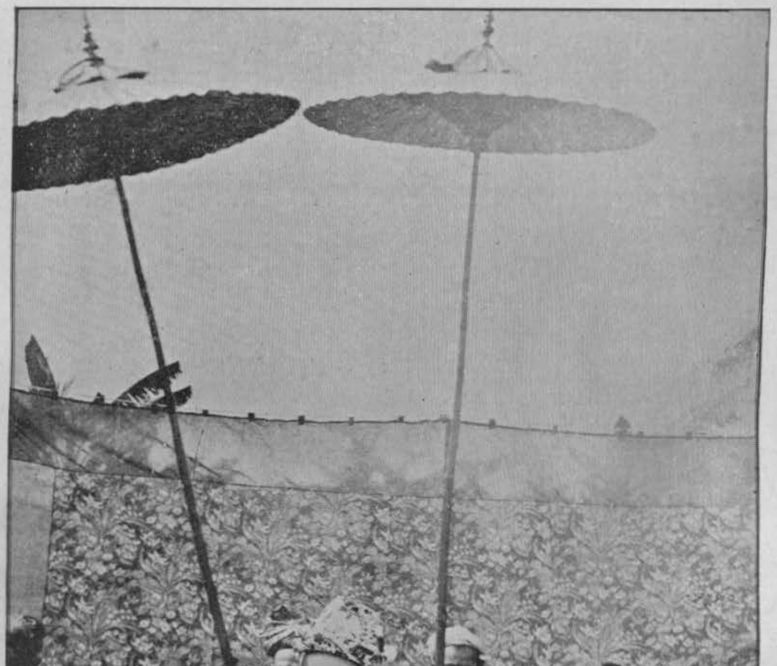


Photo-Block.

Survey of India Offices, Calcutta, June 1899.

TRANS-SALWEEN SAWBWA AND WIFE IN FULL DRESS.

Byuha, the Shwe-pon-ni-dan, and other treatises on court etiquette and duties. Moreover there is a categorical list of "The thirty-seven *nats* of Burma," and their history is given at length in the Mahā Gita Medani.

Names of "The thirty-seven min" nats.

No.	Name of *nat*.	Family.	No.	Name of *nat*.	Family.
1	Thagyā *nat* ...	Royal	19	Shwe Byin Ngè *nat or* Nyi-daw *nat*.	Poor.
2	Mahā-giri Māgayi *nat* ...	Poor	20	Mandalay Bodaw *nat* ...	do.
3	Shwe Myet Hna *nat*, sister of 2, also called Taung-gyi *nat*.	do.	21	Min-tha maung Shin ...	Royal.
			22	Hti-byu Saung *nat* ...	do.
4	Shwe Na-be *nat* ...	do.	23	Hti-byu Saung mè-daw ...	do.
5	Taung-ngu Shin-min gaung	Royal	24	Parreinma-min gaung ...	do.
6	Thôn Pan Hla *nat* ...	Poor	25	Min Sithu *nat* ...	do.
7	Shwe Nawra-htā *nat* ...	Royal	26	Min-dara-gyi *nat* ...	do.
8	Aung Zwa-magyi *nat* ...	Poor	27	Thandawgan *nat* ...	Poor.
9	Nga-si Shin *nat* ...	Royal	28	Tè (or Tabin) Shwe Hti *nat*.	Royal.
10	Aung-pin-lè Sinbyu-shin ...	do.			
11	Taungmagyi *nat* ...	Poor	29	Min-yè aung-tin *nat* ...	do.
12	Myauk-min Shin-byu ...	do.	30	Shwe Sitthi *nat* ...	do.
13	Shin-daw *nat* ...	do.	31	Mèdaw Shwe Saga *nat* ...	do.
14	Nyaung chin (O) *nat* ...	Royal	32	Myauk-bet Shinma ...	do.
15	Maung Hpo Tu *nat* ...	Merchant	33	Anauk mibaya *nat* ...	do.
16	Yun-Bayin *nat* ...	Royal	34	Shin-Kôn *nat* ...	Poor.
17	Maung Min Byu *nat* ...	Poor	35	Shin-Kwā *nat* ...	do.
18	Shwe Byin Gyi *nat* or Naung-daw *nat*.	do.	36	Shin-ne-mi *nat* ...	do.
			37	Min Kyawzwa *nat* ...	Royal.

Mr. Taw Sein Ko says that there are properly only thirty-four *nats*, "but the number thirty-seven has attained a popular fixity, "because the book of odes chanted when offerings are made to them "consists of thirty-seven odes, a number of the *nats* having more "than one ode devoted to them." This may be so, but it is an undoubted fact that the thirty-seven names given above are now universally accepted and are formally tabulated and discussed in the Mahā Gita Medani. Moreover rude images of the whole thirty-seven are carefully preserved in the enclosure of the Shwe Zigôn pagoda at Pagān. It is true that the Thagya Min there has a shrine apart, and as the king of *nats* is worshipped separately and in a quite different way from the ordinary *nats*. Moreover the brothers Shwe Byin are always worshipped together and the Mahāgiri *nat* has usually coupled with him his wife Shwe Na Be, his sister Thôn-pan Hla or Shwe Myet-hna, and his niece Shin Ne Mi. Thus, though there are actually thirty-seven, there are only thirty-four occasions of worship. The Mahā Gita Medani gives a slight history of each of these *Nat-min* and then the proper ode, with indications as to the dress of the *Nat-kadaw*, or medium, and instructions as to the character of the accompanying music. Mr. Taw Sein Ko

(*Transactions of the Ninth International Congress of Orientalists, 1893*) says : "The odes are strictly speaking short autobiographical "sketches in metre, recited by mediums when they are possessed, "and are somewhat moral in their tendency, inasmuch as they im-"press on the audience the sin of treason, rebellion, and assassi-"nation. In the case of *nats* who were members of the Royal family, "they give a succinct account of their genealogy."

Some examples translated from the Mahā Gita Medani will best show their character and perhaps indicate that the monks have no great reason for antagonizing this excrescence on Buddhism, or perhaps it would be more accurate to say, this basis on which the Buddhism of the people rests, and are even justified in the mild toleration they extend where indeed they do not themselves actually take part.

Thagya Min.

The Thagya or Thi'gyan Min is the King of Tawadeintha, the *nat* country, and his annual descent to earth marks the beginning of the Burmese New Year. The Thingyan or water feast is described in the *British Burma Gazetteer*, and it is the most familar to foreigners of all Burmese festivals. The Mahā Gita Medani gives scant details about him. He is, it states, the representative of the king of Thagyas, who lives on the summit of Myin-mo (Mount Meru). On festival days a large shed is erected, and in this it is proper to act various kinds of plays. Whilst these are going on there enter the *nat-htein*, or spirit mediums, all dressed alike in ornamental bordered waist-cloths, broad sleeved jackets, and with white shawls thrown over the shoulders ; with shells in the right hand and sprigs of the tender leaves of the *Eugenia* (*thabye*) in the left. They step forward in a graceful fashion and, standing upright, chant the *nat-than* as follows :—

I am the king of the worlds that are situated in the midst of the Four Islands, and are surrounded by the Seven encircling Seas and the Seven ranges of Mountains. The righteous and the pure in heart will I protect, and I will punish such as are ungodly and do evil. Therefore have I descended from a height of one hundred and sixty-eight thousand *yuzanas* to watch over the good and over the bad and therefore do I pray that every one may avoid evil and cleave fast to that which is good.

Then the music strikes up and the ceremony concludes with the vigourous dancing of the *nat*-inspired women.

The Thagya Min, however, stands apart and has the supernatural character of an angel of the skies, rather than the earthy connections of the others, who are more emphatically spirits in the common acceptation of the word. It may be noted that the obsession, hypnotism, or mesmerism, which Mr. Andrew Lang maintains to be

the origin of religion, is here conjoined with the worship of the departed, which Mr. Tylor, Mr. Clodd, and a multitude of others believe to be the origin of religion. Spirit worship is here mixed up with spiritualism.

Mahāgīri Nat-min.

The Mahāgīri, Magari or Māgayi *nat* is as universally and perhaps more constantly worshipped, and with him is usually conjoined his sister, Hnitma Taunggyishin, often called Shin-dwe Hla, or Sawmè-shin, but most generally Shwe Myet-hna *nat*, the golden-faced one. As Mr. Taw Sein Ko says, his wife and his niece are also sometimes added. The story told varies slightly, but the main points agree in all districts, and the popular version is given here rather than the bald statement of the *nat* book. In the reign of Tagaung Min, the king who took his name from his capital Tagaung, or Old Pagān, as it is frequently called, there lived in that city a blacksmith whose name was Nga Tin Daw, who had a son and a daughter. The son was named Nga Tin Tè, and he was celebrated throughout the whole kingdom as the cleverest blacksmith and the most powerful man of his age. He had great influence in Tagaung and the king was afraid of him and feared that he would raise a rebellion. In order to conciliate the blacksmith the king married Tin Tè's sister and gave her the title of Thiriwunda, but still he remained uneasy in his mind and finally told the queen to summon her brother to the palace to receive an appointment. When Tin Tè came he was seized by the royal guard, bound to a *sagabin*, a tree which grew in the palace yard, and burned to death. The queen begged permission to bid farewell to her brother, went up to the burning pile, threw herself into the flames and perished with him. The fire was put out at once, but both brother and sister were dead and all that remained of them was their two heads, which had not been in any way injured by the flames. The brother and sister became *nats* and took up their abode in the *sanga* tree which grew within the palace walls. From this they descended periodically and killed and ate people, particularly those who came near the tree. After this had gone on for some time the king had the tree uprooted and thrown into the Irrawaddy river. The tree floated down with the current as far as Pagān, where it stranded on the river bank close to one of the city gates. Thinlegyaung or Thilagyaung was then king of Pagān, and to him they showed themselves one night, but not before they had killed and eaten every one who came near the tree. They displayed their human heads and told king Thinlegyaung of the cruelty of the king of Tagaung. He took pity on them and ordered that a suitable temple should be built on Popa hill to receive the Mahāgīri *nats* and their tree. This was done and the tree was removed to its present position near Popa, where a portion of it is

said still to exist. The *nats*, when they were thus properly housed and treated, gave up active destruction and only attacked those who directly offended them. To further propitiate them the king ordered that every year in the month of *Nayôn* (May-June) a grate feast should be held in their honour. This festival was regularly kept up until the time of Bodaw Payā, who presented two golden heads to the shrine to be kept by the official in charge of the Popa neighbourhood and to be brought out every year for the festival. On the day appointed for the feast, the golden heads were carried to the spirit temple. All the officials and people from all parts of the surrounding country gathered together and marched in procession, headed by bands of music and dancers. Ministers were also specially deputed from the Court in Ava or Mandalay to attend the feast with offerings. When the shrine was reached the heads were placed on the altar and various offerings were made to them and certain propitiatory rites gone through, after which the heads were restored to the charge of the proper official. These heads were removed on the British occupation to the Pagān treasury, where they were kept for some years. The special festival has ceased, and the golden heads of Mahāgiri are now to be seen in the Bernard Free Library in Rangoon. The Mahāgiri *nats* were of great service to King Kyanyittha both before and after he succeeded to the throne of Pagān. In recognition of this he issued an edict that all his subjects should honour these two *nats* by suspending a cocoanut to them in their houses. The brother has assumed the sole credit in many places and figures as the Eing Saung *nat*, the *lar familiaris*. In every Burman house, not merely in Upper Burma, but even in Rangoon, this cocoanut will be found hung up. It is usually placed in a square bamboo frame and over the top of the cocoanut is placed a piece of red cloth which represents a turban. When there is any sickness in the house or in the family, the cocoanuts are inspected. The special points are that the water, or milk, should not have dried up, and that the stalk should still be intact. If anything is amiss, a fresh cocoanut is hung up. Of the Mahāgiri *nat* Mr. Taw Sein Ko says in the paper quoted above:

"It is evident that since this worship was inaugurated animal sacrifices and offerings of alcoholic spirits were made to these *nats*, for Burmese history records that in December 1555 A. D. the Hanthawadi Sinbyuyin, the Branginoco of the early European writers, reached Pagān in the course of his progress through his newly conquered dominions, and witnessed the festival held in honour of the Mahāgiri *nat* and his sister. Noticing that intoxicants and sacrifices of white buffaloes, white oxen, and white goats were being made to the *nats*, he commanded that such practice should henceforth cease, because it was opposed to the humanitarian doctrines of Buddhism, and because it would entail suffering in hell on those who prac-

tised it. In 1785 A. D. Bodawpayā, the great-great-grandfather of the last king of Burma, had new golden heads of the *nats* made, and these were replaced in 1812 A. D. by the same king with larger and more finished heads of the same metal, weighing in the aggregate about two and half pounds."

The Mahā Gīta Medani says that a proper shed must be erected in which plays are performed. While these are going on, the *nat-kadaws*, dressed as described in the chant, and with tender leaves of the *thabye* tree in their left hand, which must be laid down before they begin to dance or sing, come forward and prostrate themselves three times, rising to their feet before each prostration. Then they sing—

The Nat-than.

Here do I come, radiant with flowing girdle and satin loin-cloth of foreign manufacture, with white muslin cloak and ample sleeves. In my right hand I hold a fan and my helmet is made of palm-leaf gilt with pure gold. Aforetime I was living in Tagaung, whose ruler suspected me causelessly of harbouring evil designs against him. He commanded his Ministers to arrest me and put me to death; therefore I was freed to go and hide me in the jungle. Then the king bethought him of a stratagem. He made my sister Saw Mē Ya his chief queen and tempted me back by the promise of the office of governor of the capital. When I came back he caused me to be tied to a *saga* (*champa*) tree and there I was burned alive, for sword and spear were alike powerless to do me harm. Thus did I become a *nat*. My sister, whom I dearly loved, was named Shin Dwe Hla or Saw Mèya, and now I am known as Mahāgiri or Maung Tin Dè. I pray you of your courtesy let your love for a man of the upper country be as sweet as honey in the Court. [Here are introduced instructions to the band to strike up the appropriate music.]

The lady of the golden palace is worthy of love for her grace and beauty. The glory of His Majesty is as that of the sun in all his splendour and magnificence, yet, though he thus shines with refulgence, he beams on the people with a fragrance and a cooling breath like unto a fresh breeze laden with the odours of the wild jasmine. Hence it is that the countries which own his royal sway are many and varied and therefore is his capital happy and prosperous. The great mountains of rock covered with *sâl* and *malla* trees are now the dwelling-place of the *nats*. Their retreat is gorgeous with gems and responds to the prosperity of the country. There live Her Majesty the Chief Queen, the lady of the Golden Palace, and there also lives her mighty brother, renowned for his valour and for the strength of his body. These two are by Royal Decree rulers over

a stretch of country over which they keep watch and ward. By Royal Command issued at the desire of a high-born queen, the Chief Queen, whose birth was lowly, was consigned to the flames with her brother and was burned to death. This mighty mountain (Popa) is now the abode of their *manes*.

Then the music breaks in and the frenzied dance begins.

Shwe Myet-hna *nat*.

This Chief Queen, the Hnit-ma-daw Taung-gyi Shin, the Shwe Myet-hna *nat* is, at Popa at any rate, always worshipped along with her brother. But she has a motet of her own.

The Nat-than.

With a white scarf wound round my head, a jacket embroidered in silver and gold with wide fringes and tight sleeves, a cotton petticoat (in the case of male *nats* the mediums, who are nearly always women, wear the masculine garment) with an ornamental border, and a gold-laced girdle, I, the Queen of Tagaung, the fondly loved and blameless daughter of the *Myothugyi* of Tagaung, Maung Tin Daw, have decked myself and come. [In the preliminary instructions it is stated that when the *clairvoyantes* appear they must each hold in the left hand a *hpalasôn*, or betel-box with four silver cups enclosed, and in the right a water-goblet. These are three times raised and lowered and are then laid aside before the song and dance begin.] I was a true sister to Shin Dwe Hla, who was younger than I and now I live on Popa hill with my loving brother *nat*, Maung Tin Dè, who all for his mighty strength and vigour was tied to a tree and burnt, though I pleaded sore that he was brother-in-law to the king. Then in my grief did I hasten to the burning pile and threw myself into the flames. They strove to save me, but all that they saved was my head, which parted from my body. Then did I become a *nat* and among the *nats* I am known as the golden-faced one. The king interred us beneath the flower-tree in the palace court, brother and sister he buried us there. But there came the many, there came the foolish, there was no place for the viewless spirits of the air. Therefore the tree was torn up, by the roots it was uprooted, with its roots it was cast into the mighty river. It floated down the river, it was borne by the great Irrawaddy, the floods bore it to the north-gate landing-place of the palace at Pagān. There we saw the king, there we told our tale, and Thinle Gyaung, the king, gave us all Popa for our realm.

Then to the appropriate music indicated in the text begin what a worthy Burmese official calls "the enthusiastic dances of the *nat*-inspired females."

Shwe Byingyi and Shwe Byin-ngè.

The story of Shwe Byin Nyi-naung is told under the head of Madaya in its popular and more picturesque form. The sketch in the Mahā Gita Medani gives little more than appears in the chant as translated below. In the case of these *nats* the proceedings are more extended. The *nat*-inspired women first appear in waist-cloths with an ornamental border, wide sleeved jackets, white scarves thrown over the shoulder, and light red coloured helmets on their heads. In their right hand they have some young shoots of *Eugenia*. They step forwards and backwards three times before the shrine and then retire to change their costume for embroidered velvet close-fitting jackets, light red native *pasos*, and hats for their heads, and then with a tray full of plantains in the left hand and a *dha* in the right they come forward again and dance before beginning to sing.

The nat-than of the elder Shwe Byin nat.

With green velvet tunics embroidered in various colours, with light red loin cloths, red turbans, and sashes we two brothers have adorned ourselves and come hither. We were the two pages in waiting who served Nawra-hta, the king, and went before him with naked swords in our hands. Our father was the *kala*, the native runner who was famed for his speed and gained the name of the Royal Runner. Five times he ran to Popa hill and five times he returned with posies of fresh flowers before the king had combed his hair. It fell on a day when he was in Popa hill that our father met with a *biluma*, an ogress. They loved one another and cherished their love on the hill. In the fullness of time she gave life to us two at a birth, and when we had grown to youths, the king attached us to his person and called us Shwe Byin Naungdaw and Shwe Byin Nyidaw. We went with him on his journey to China and it was through our endeavours that he brought back the relics of the Buddha which he obtained from the Udibwa. When he came back he ordered a pagoda to be built at Taung Byôn and this was to be erected by all the persons of his court. Nawra-hta, the king, went to view it and found two spaces where there were wanting the bricks which we brothers had not put in. Then the king was wroth and sent us to our death and thus we became *nats* and the pretty maidens have missed us from that day.

The nat-than of the younger Shwe Byin.

I am the younger brother of Shwe Byin Gyi, who is the chief *nat* of yonder Taungbyôn. The true servant of king Nawra-htazaw was I, and time and again I and my brother served him at the risk of our lives. But he slew us because he found not the two

bricks, which was the share of work allotted to us whilst we were away. On our deaths we forthwith became *nats*, but there was no place where we might stay. Therefore we clung to the royal barge and stayed it in its course. Then did the king grant to us the sovereignty over all the country that lies by Taungbyon. Our mother lives on Popa hill, but we two brothers live in Taungbyôn. Now all ye pretty maidens love ye us as ye were wont to do while yet we were alive.

There is a suggestion of Adonis, Thammuz, Osiris, in the chant, and a hint of phallic worship in the method of death (see under Madaya) which appears to have been dropped in the modern tale, if it ever existed. Still one may recall Thammuz—

> Whose annual wound on Lebanon allured
> The Syrian damsels to lament his fate
> In amorous ditties all a summer's day.

None of the *nats* have particularly estimable histories. It is the old story: the good may be neglected because they are easy-going and harmless; the vigorous, and especially the vicious, have to be made much of and cajoled.

The Min Kyawzwa *nat*.

The Min Kyawzwa *nat*, a so-called royal spirit, may serve as an instance. The Mahā Gita Medani has frank doubts as to his identity, but none as to his existence. This is what it has to say—

An old king of Pagān had two sons called Sithu and Kyawzwa, by his northern Queen, and a son named Shwe Laung Min by the Queen of the south palace. He wanted Shwe Laung Min to succeed him, and, to save that prince from the jealousies and plots of his half-brothers, he sent these two to live at Taungnyo Lèma, and later, when he heard that they had made themselves very powerful, he ordered them farther off to Taungngu. From Taungngu the two brothers went and attacked the Karens and, when they came back from their expedition, they built a city called Ku-hkan. They dug a number of canals round about it, so that the city came subsequently to be known as Myaungtu Pauk and remains to the present day as Myaungtuywa. But there was not enough water in the canals, so the elder brother Sithu murdered Kyawzwa and Kyawzwa became a *nat*. As a *nat* he set on his brother and strangled him and Sithu became a *nat* too (No. 25 in the list). A large building was set up for a dwelling-place for Min Kyawzwa and it may be seen still. In the month of *Nayôn* (June) every year a feast is held in his honour with fireworks and cock-fights.

But, continues the Mahā Gita Medani, the history of Min Kyawzwa is quite differently related in another chronicle.

In former times the king of Pagan had four ministers who were brothers. He gave in marriage to Kyawzwa, the youngest of the four, a girl named Ma Bo Mè, who sold spirituous liquor in Popa village.

They lived happily together for a time, but Kyawzwa became addicted to his wife's liquor and spent all his sober moments in cock-fighting and letting off fireworks. He died and became a *nat* in Ku-hkangyi Myo.

The religious are left to choose which version they please. The main point is the drink, the cock-fighting, and the fireworks.

In the shed erected for the festival the *nat-kadaws* come forward all dressed alike in red *pasos*, the end of which is thrown over the shoulder, and red turbans. They imitate the letting off of fireworks and the proceedings at a cock-fight and they slap their left biceps with the right hand (as a Burman does when he is challenging to a wrestling or boxing bout) several times and then they dance and set up the *nat-than*.

Here am I come. I, Maung Kyaw Zwa, the dearly loved husband of Ma Bo Mè, of Popa village, clad in a spangled red garment. I who drank deep of strong drink and loved fireworks and cock-fights. I was the youngest of the four brothers, who long and faithfully served Alaung Sīthu, the monarch of Pāgan. Daily I went from place to place to gratify my foibles with my fighting cock hidden in my arms and my money in my waist-belt concealed from Ma Bo Mè, the wife of my bosom. Many a main did we fight under the shade of that pipul tree and many a time did I reel along the streets, drunk with Ma Bo Mè's stingo, and many is the time the pretty little maids picked me up out of the gutter.

Then the corybantic music strikes up and the Bacchantes weave their paces.

These spirits of the Burman's mythology are thus all anthropomorphic, but unlike the gods of the Vedic mythology, from which they might be supposed to be borrowed, they are by no means glorified. The Rig Veda has numerous hymns, but they have little to do with witchcraft, with spirits, or with life after death. The Brahmanas introduce *devas* (gods), on the one hand, and demons (*asuras*), on the other, and they introduce the terrestrial gods, the *vasus*, but there is a strong tendency to Pantheism and the invoking of gods in the mass. The Atharva Veda has a great deal to say of domestic and magic rites. Personification, however, nowhere in the Vedic mythology attained to the individualized anthropomorphism characteristic of the Hellenic gods. The Vedic deities

have but very few distinguishing features, while many attributes and powers are shared by all alike, partly because their anthropomorphism is comparatively undeveloped. Thus, though these spirits of the Burmans here and there suggest the Vedic gods—the Thagya Min may for instance very well be paired with Dyaus, Zeus, Jupiter—as do some of the greater spirits of the Kachins (*q.v.*), yet it seems most probable that they have come down from the common remote stage in the mental development of mankind which deified first the phenomena of nature and afterwards the passions of mankind. Indian influence is certainly very slight; notwithstanding that the most conspicuous of Burmese literature comes from India, yet the tales of the Ramayana do not introduce themselves into this national religion. The names, the ideas, and the incidents are purely of the people. The Pantheon is much more like that of the Greeks, or of the Scandinavians, but with all the difference that is implied in the working out of the same original idea by a poet, by a viking, and by a farmer. The Burmese deities are very materialized indeed, but they never fall to such evil plight as to be turned up and birched, or to be doused in a pond, as happens to some savage gods. They may rather be compared to the patron saints of Europe,—the St. Georges, St. Denises, St. Crispins, St. Sebastians, St. Cecilias, still more to the St. Tammany of America, and most of all to such tutelary deities as the Flemings still create, for the town of Termonde in Belgium has recently adopted Giant Polydore to commemorate de Keyser, once the Lord Mayor of London.

Moral elevation has not so high a position with these gods as power. Epithets such as "kind and true" are far less prominent than such as "great and mighty." The *nats* can do whatever they will. On them depends the fulfilment of wishes. They have dominion over all creatures and no one can thwart their ordinances. A further parallelism with other forms of religion may be found in the triennial dedication of four virgins to Sao Kang, the spirit of the Kĕngtūng (*q. v.*) city lake. This was last done in 1893. It does not appear that spinsterhood or chastity is required of these Shan vestal virgins.

Besides the recognized *nats* of the kingdom there is no lack of local spirits, more like subjects for the study of the Psychical Society than objects of worship, mere ghosts rather than heathen deities. They are to be found everywhere all over the country, no less on the banks of the Irrawaddy than in the most secluded hills. Mr. Maxwell Laurie writes as follows in the Mandalay Settlement Report for 1892-93.

"There is a considerable body of evidence which goes to prove that field number 105 of Kanniza *kwin* is under the guardianship of *nats*, *bilus*, *pyeittas*, or some form or other of disembodied spirit. No man has within human memory eaten of the fruits of that holding without bringing grievous calamity on himself or on his wife and family. No man has even eaten for more than one season of the fruits from that land. Recent instances are numerous. One Maung Win cultivated the holding some fifteen years ago. Walking past the place one night he saw what he fancied to be a black pig eating his crops. He pursued the pig and arrived within a few paces of it when it suddenly swelled into an enormous black shadowy form. U Win was so terrified that he took to bed and died before morning.

"Maung Win's successor was Maung Mye Zu, who died of fever less than a year after he had begun to work the land. Maung Lu Gyi was then foolhardy enough to try his luck, but his wife died before Lu Gyi had got so much as one season's crop, and Lu Gyi fled in terror. Maung Lu Gyi was followed by Maung Lun, who was scared away by a white apparition which rushed at him one night out of the neighbouring Lemyethna pagoda. Maung Lun's sense of contrition was such that he forthwith became a *pôngyi* and thus escaped imminent destruction. Maung Aw and his wife Ma E next volunteered in 1888; husband and wife both died within the year. Maung Aw was succeeded by one Maung Shwe Baw, Maung Shwe Baw was in 1891 mauled by a leopard and died within one year of the date of his taking over the holding. The leopard was subsequently shot by Myoôk U Po Shwe, but the holding has remained fallow since the death of Shwe Baw in 1891. Here is at any rate a remarkable series of coincidences, every one of which has happened within the last fifteen years and is vouched for by the most respectable men of the village.

"Of the *Min Nyi-naung Nat-sin*, the *Nat Thitbin*, and many other places it is well known that any man, whatever be his social position, approaching in an irreverent and mocking spirit will be stricken with headaches, fever, or insanity. This is proved by instances innumerable.

"There are certain holdings in Nanmadawza *kwin* which bring sure death to the cultivator and his cattle. The first cultivator of a certain one of these holdings was a Manipuri immigrant, U Pawneyan, who by charms or otherwise extracted good crops from the holding. After the death of U Pawneyan his successor was watching the autumn floods subside, when he heard as it were the roaring of a whirlpool, and a large wooden *limban* (food-stand) floated to his feet. He picked it up and was cleaning it with the intention of using it, when it suddenly slipped out of his hands and plunging into the water disappeared for ever. Since then the field has yielded only the most meagre crops and caused certain death to the cultivator and his cattle. Another marvel is related by Maung Thè, a respectable old resident of the adjoining village of Thayetkan. In the field which is now called Kyauktaing Lè (the field of the stone pillar), while the cultivator was ploughing, his ploughshare struck a stone pillar embedded in the ground. All the neighbours were called round to see the stone. They at once spotted a miracle, as the field had been ploughed for many years and no large stones had previously been turned up. The nature of the soil too (river alluvial) rendered it impossible that there could be any large stones there without human or superhuman intervention. The distance (over a

mile from any village) was against the possibility of any one having placed the stone there. The inference was obvious, and they at once threw up a small bund round the spot to keep it sacred. They then ate breakfast and smoked cheroots, after which one of them suggested that they might have another look at the pillar. But the pillar had vanished while they were eating and smoking within a few yards of it. One of the last men to work this holding was U San Waing in King Mindôn's time. San Waing's premature death has deterred other villagers from cultivating the field. Another part of the holding was worked only a few years ago by one Maung Tayôk, whose buffaloes died and whose crops failed, Maung Tayôk having finally to migrate to Lower Burma, leaving nothing behind him but a few debts. It is said that when the annual floods from the Irrawaddy rise over a certain portion of the tract, the waters are troubled and, as if from winds blowing in contrary directions, small waves rise, which beat and clap against each other like game-cocks fighting. All these disasters and preternatural manifestations are the results of strong efforts made by disembodied spirits to show that their power still exists and must be respected in certain localities. Many hundreds of these tales are narrated in good faith and with perfect gravity."

Such stories remind one of the ordinary ghosts and spooks of Europe. Burmese houses do not lend themselves to haunted chambers and secret stairs, so the ghosts stay outside. It is to be noted that there are no ghosts about pagodas, though very often there are spirit shrines close to them, showing a canny desire on the part of the people to stand well with both sides. Ruined churches in Europe are favourite resorts of ghosts, just as—

"Fallen angles oft."
Straight become fiends.

But this is because the God's acre is round the church. Mr. Taw Sein Ko says in the paper previously quoted :—

"The existence of witchcraft is recognized in the Burmese law-books, and instructions are given in them as to finding out witches, and as to the manner of punishing them * * * *

"*Tasè* is the generic term applied to all disembodied spirits which existed as human beings. The *hminza* are spirits of children, who assume the appearance of cats and dogs. The *thayè* and *thabet* are spirits of those who died violent deaths, or of women who died in childbirth, or of those who lived wicked and sinful lives. These spirits are inimical to mankind, and are represented in folk-lore stories as having hideous bodies, as big as those of a giant, and with long, huge, slimy tongues, which they could make use of as the elephant would his trunk. They are bloodthirsty and their special delight is to cause the death of human beings. Female spirits who are in charge of treasure buried in the earth are called *ôkta-zaung*. All these spirits, with the exception of the last, are believed to roam about the haunts of men at sunset in search of their prey, and to be specially active in their peregrinations in times of an epidemic, as cholera or small-pox. They are therefore frightened off during epidemics by making a tremendous jarring noise by beating anything that might come in one's

way, as the walls and doors of houses, tin kettles, metal trays, cymbals, &c. These evil spirits are sometimes said to enter the bodies of alligators or tigers, and to incite them to cause great destruction of human life."

The spirit worships of the wilder hill tribes is much more directly animistic than that of the Burmese. But all the more prominent and powerful *nats* have names and special feast times. Details will be found under the head of the Chingpaw and the Karens, besides incidentally elsewhere. It may, however, be noted that none of the spirits are beneficent. There are no fairies; no good people; there is no Titania, no Queen Mab crowned with cowslips, no Oberon with a diadem of moon-beams, no Ariel, no Robin Good Fellow; nothing like Mustard Seed, Cobweb, or Pease-Blossom. The fairy tales are all grim; the goblins are none of them goodnatured. There are no Prince Charmings and no Sleeping Beauties. Signs of totemism are frequent in the shape of amours in animal form and there are abundant hints of cannibalism in the remote past, but the chief characteristic is the recognition of remorseless power and the total ignoring of a happy ending for any but one of royal blood.

Mediums.

Spirit mediums, people who are able to invoke and exorcise or placate the *nats*, are common everywhere. In Mandalay there were regular *natsayas*, *natôks*, and *natsaws*, male and female, who officiated at the annual State spirit feasts and sung the proper chants and offered the proper prayers. In the country such people are called in in cases of sickness where ordinary measures fail to restore health. These *natwuns* are in the great majority of cases women. They usually wrap a piece of red cloth round their heads and limit their operations to hysterical chanting and wild whirling dances, again suggesting Mr. Andrew Lang's theory of obsession as the foundation of religion. But occasionally they do more. In various parts of the Northern division when such a *natsaya* is called in, a bamboo altar is constructed in the house and various offerings (boiled fowls, pork, plantains, cocoanuts, rice) are placed on it for the *nat*. The *natsaya* then stands a bright copper or brass plate on end near the altar and begins to chant, at the same time watching for the shadow of the *nat* on the polished copper. When this appears the officiant begins to dance and gradually works herself into a state of ecstasy. The state of tension produced frequently causes the patient to do the same thing, with obvious results one way or the other, especially if, as not unseldom happens, this invocation of the possessing spirit is continued for two or three days. When children are ill, little altars are built, or, if the village is on the Irrawaddy, little boats are made. On these an egg, some of the child's hair, and some sweetmeats are placed and this is consigned to the river.

This is called an offering to the Chaungzôn *nat*, the spirit of the junction of the water.

The following is an account by an eye-witness of some ceremonies at Mingin on the Chindwin, to propitiate the *nat* who was supposed to have caused a deficiency in the rainfall. The rites were performed in a stretch of thick jungle about a quarter of a mile from the village. There were about twenty men and as many boys, but no women. Although women are most commonly the hierophants in the exorcism of *nats*, they are never present at formal *nat* feasts. The *natsin* was a small wooden house on piles at the foot of a fine *padauk* tree, which was connected with the back door of the shrine by a number of plies of white thread, called the *nat's* bridge. The spirit ordinarily lived in this tree and only came to the shrine to secure the offerings. He was a jungle spirit, a hamadryad, but in the same grove lived the Myoma *nats*, the guardians of Mingin, and to them also was erected an altar, a small platform of green bamboo about two feet by one. They were the more powerful as regards Mingin, but had no influence over the weather. Nevertheless, to prevent them from being jealous of offerings made to the woodland *nat*, this special shrine was built. It also stood under a large tree. The officiating priest was an old Burman of no particular position in the village. He commenced proceedings by offering a tumbler of *kaungye* (rice-liquor) to the Myoma *nats*, and then presented a corked bottle full of the same to the Seiktha deity of the *padauk* tree. The offering of rice-spirit was followed by another of water in the same order and then little heaps of pickled tea placed on large leaves were deposited with the same genuflexions as are customary at the pagoda. This was done by the assembled villagers and while it was going on the *saya* sprinkled water all round both shrines and strewed rice in handfuls about them. This rice was furnished by each household in the village and each had also supplied a fowl and an egg, which were brought to the grove. The officiating *saya* then recited a long prayer asking for rain from the north and from the south, for peace and deliverance and for immunity from evil generally. When this was over the will of the *nats* was sought for, the signs being furnished by the fowls and the eggs. The fowls were cut open from the tail with a *dha* and the entrails were extracted. These were examined one by one by the *saya*. The chief signs are the length and thickness of the intestines and the size of the stomach; the greater the more promising the sign. The larger side of the bowels should be turned upwards.

Next the eggs were examined. These had been boiled hard and their whiteness was the *primâ facie* test. Any discolouration was

bad and the greater this was the more unfavourable the omen. Further details there were, but they were known only to the *nat saya*.

When this had been done the fowls' entrails were tied to feathers and hung up round the tree and round the shrine. The service was then over. The congregation took the bodies of the fowls and the eggs and *kaungye*, went home in a body, cooked the fowls, ate them and the eggs, and drank the liquor.

The much stronger leaven of spirit worship in the upper province is no doubt due to the later appearance of Buddhism and to the way in which it was forced on the people.

Buddhism was not established in Upper Burma for six centuries after Buddha Ghôsa brought the Buddhist scriptures from Ceylon to Thatôn. This is no place to discuss the Buddha Ghôsa paradoxes, but there seems no reason to disbelieve the explicit statement that Nawra-hta wished to put an end to the *naga* or serpent worship which was the religion of Pagān and, since he could get the books he wanted in no other way, he overthrew Thatôn and carried books, monks, King Manuha, and his people, and everything portable, in the most complete and thorough fashion to his own capital and started the new religion thus in the most autocratic oriental way. This was in 1058 A.D., and it seems probable that Buddhism only extended to the upper valley of the Irrawadddy and to the Shan States as Burman influence extended thither, and this, as appears from Shan and Chinese annals, was much slower than has hitherto been believed. It is therefore natural that *nat*-worship should be much more prominent in Upper Burma than it is in the delta.

It is directly stated that *naga* worship was the prevailing religion in the eleventh century, but this need not be taken too literally, and in any case serpent worship is only one of the earliest known forms of animistic religion. The serpent was the tempter in paradise; he was the guardian of the golden apples; he was wreathed under the altar of Pallas at Athens; the shedding of his skin was thought to renew his life and he was the symbol of immortality or eternity; there are some who believe that the story of St. Patrick merely means that the Saint was putting an end to the ancient creed of the country when he expelled the reptiles from Ireland. The traces in Burma are very strong in the literature of the country, if they are not so much so in direct worship. There is scarcely a single chronicle in which a *naga* does not appear in some form or other, most commonly as a maiden, with a fate usually pitiable rather than otherwise, but sometimes as the king of the *nagās*, in the same fashion as Jupiter Ammon appeared to

Olympia and became father of Alexander the Great, or as Jupiter Capitolinus occupied a similar relationship to Scipio Africanus. The fact may be another link in the Burmese Kings' claim to be connected with the Sakya clans of Upper India. The mythical genealogy of the Raja of Chutia Nagpur claims Pundarika Nag as ancestor of the house. He married Parvati, the beautiful daughter of a Brahman and, in memory of their serpent ancestor, the crest of the house is a hooded snake with human face. Vernag, the name of the fountain from which the river Jhelum takes its rise in the valley of Cashmere, is another indication of the old snake worship. But the *Märchen* of the animal bride or bridegroom is common to every race under the sun. Everywhere are to be found anthropomorphic gods, capable of assuming animal shapes, tricky, capricious, limited in many undivine ways, yet endowed with magical powers. The Brahmanic myths are not likely to be confounded with those of the Edda, or with the mythical gods of Homer, but they are of the same stuff as the dreams of savage mythology and they are cruel, obscene, or simply puerile, according to the fancies of the myth-makers. Exclusive serpent worship need not be insisted on, any more than tiger-worship need be assigned to the Hsenwi Shans because of their tiger myths and the name Hsö assumed by all their *Sawbwas*, or frog worship to the *Wa* because they claim to have risen by evolution from tadpoles. Least of all is it necessary to excite orthodox philological mythology students by referring to Bheki, the sun frog, called Lahu by the Eastern Tai. Zoolatry does not appear to be common either in Upper Burma or in the tributary States, though there are signs of it in the legends of the hare, the crow, the dragon, and what not. The allied form Totemism is nowhere prominent except among the Karen tribes, though it may be traced in the *Nan*, or animals distinguishing the Burman's birthdays as well as in the amours in animal shape.

The study of the folk-lore of races in all parts of the world, races who can never have had any communications with one another, or at any rate not for untold generations, shows that there are usages, myths, and ideas common to humanity. These are obvious in savage or uncivilized races, a little less clear among the rude peasantry of the civilized countries of Europe, and only to be traced by induction in the ritual ceremonial and religious traditions of the educated. One set of theorists comes to the conclusion that the original religion or cult of the people everywhere was deprecation of the powers of evil, or to put it conversely, propitiation of luck; in either case, demonolatry, for there are spirits good and spirits bad everywhere, though the good spirits in most places secure least attention. Others from the same facts arrive at the conclusion

that it was the dead who were first worshipped. Mr. Herbert Spencer is persuaded that "the rudimentary form of all religion is the "propitiation of dead ancestors," which is the only real religion Chinamen have, and was the State religion of Peru, where the living Incas worshipped their dead predecessors, the villagers worshipped the man who founded the village, from whom they claimed descent; while families did the same with regard to their first and subsequent ancestors. Mr. Grant Allen in his History of Religion somewhat expands the theory when he says:—

"Thus in ultimate analysis we see that all the sacred objects of the world are either dead men themselves, as corpse, mummy, ghost, or god; or else the tomb where such men are buried; or else the temple, shrine, or hut which covers the tomb; or else the tombstone, altar, image or statue standing over it and representing the ghost; or else the stake, idol, or household god which is fashioned as their deputy; or else the tree which grows above the barrow; or else the well, or tank, or spring, natural or artificial, by whose side the dead man has been laid to rest. In one form or another, from beginning to end, we find only, in Mr. William Simpson's graphic phrase, 'the worship of death' as the basis and root of all human religion."

Perhaps the most conspicuous example of such worship is found among certain classes of the Lamas of Tibet, who according to Della Penna use human skulls for magical cups, human thigh bones for flutes and whistles, human finger joints for beads on their rosaries. The bodies of executed criminals, he adds, are kept stored up at the disposal of these unpleasant holy men. But it is obvious that nekrolatry, the worship of the dead, and demonolatry, the worship of spirits, are practically the same thing, or at any rate easily slip into one another. The idea that man does not wholly perish is universal and, if he does not, then the spiritual part of him, since it is invisible, naturally inspires awe. Some trace of the Christian idea of an immortal soul, encased in a mortal form, appears in the Burmese idea that man is composed of two parts, a material body and the *leipbya*, or butterfly spirit, which wanders in dreams, swoons, and illness generally. The Karens have the same notion and so have the Chins. The former call this personal soul *la* and the latter *klo*. An idea of the same kind appears among the Kachins in their legend of the bridge of the Vision of Mirza. Neolithic arrow heads are found in every part of the world and they and the kelts that are found with them are everywhere much alike. The early pottery of any region is very like the early pottery of any other region. The same would naturally be the case with the savage ideas out of which civilization has been evolved. Some of the ideas and myths and tales are more graceful than others, but they were probably all the same to begin with, and have only been polished or debased by the general character of the various races and the vicis-

situdes they have gone through. Race declares itself no less in the ultimate literary form and character of mythology and religion than it does in all that we are accustomed to consider most characteristic of culture and civilization.

The Chinese think each human being has three souls ; one remains in the grave, another at the ancestral shrine, while the third goes to the spirit-world, the world of darkness. The Dacotahs of North America believe that every human body has four souls. After death one wanders about the earth, the second watches the body, the third hovers over the village, while the fourth goes to the land of spirits. This is rather a reckless theory, tending to overpopulation, but it seems to point to the ladder of growth in primitive belief. The soul which broods over the body represents the earliest form ; the soul hovering over the village is one remove from this ; the soul that wanders about the earth is a step upwards ; and the fourth stage of progress assigns the disembodied soul a home in a distant land of spirits. It is further argued that the mansion in the skies always appears as the home of souls with peoples who have migrated from their old homes. The soul is never believed to take a long journey till after the tribe has taken a long journey away from the place where its ancestors lived and died. The soul goes to see its ancestors, but in process of time it is forgotten where the ancestral home was and then the sky does duty. If the tribe in its migrations has crossed a large river, then the soul has a Stygian flood to encounter. If dangerous and difficult mountains and deserts have been crossed, then a Scylla and Charybdis stand in the path of the soul. If the tribe has formerly lived upon an island, then their heaven is upon an island. The payment of Charon's obolos, the *kado-hka* of the Burmese and Shans and other races, is similarly a development of the notion that the soul will want help. The first savage notion was to kill slaves, wives, human beings of some kind, to protect the ghost, or keep him from being lonely. After a time a dog to show the way or a horse to carry him was substituted. Then came arms for defence, money for necessaries, clothes for the sake of warmth or respectability, cups to drink out of. But the older the world got and the more cynical, the worse the ghosts have fared. The Annamese give departed souls representations in coloured paper of all these things. The Chinese scatter gold leaf about, a species of postal orders on the lower world. In England the dead soldier's charger follows the coffin to the grave, but it is no longer sacrificed there. The ordinary savage simply supplies food and drink and that for about the period that a European would wear mourning. Moreover, though the animal sacrificed may be very imposing

in size and eminently worth eating, the haunch, or the shoulder, or the ribs are usually only placed on the shrine for a short time, and some races, such as the Kachins, recognize only the offal as *nats'* food and offer only that. The process of making things pleasant for family ghosts, or at any rate of conciliating them, was comparatively obvious and easy, but other people's ghosts offered difficulties. "Where no God is, spectres reign" as Novalis says, and strange ghosts were not only of unknown temperament, but there was no knowing where to have them. Moreover, the belief in original sin is universal. "The lars and lemures" might "moan with midnight plaint," but as a rule no one minded the lares; they were good spirits. It was the larvae or lemures, the bad spirits, that had to be conciliated. This was and is done by sacrifices of various kinds and by offerings. The Wa still kill human beings, but they also sacrifice buffaloes, pigs, and fowls, as do the Kachins, Karens, and generally most of the hill tribes. Even the Shans and Burmans sacrifice pigs and fowls at the regular *nat* feasts. The advance on this was to make one dedicatory sacrifice when a fixed place, like a palace or a large city, was founded. Out of this by a confusion, or a development of ideas, rose the notion that the spirit of the victim became the defender of the place, the guardian *nat* of the town. When Alaungpaya founded Rangoon, in 1755 A.D. he sacrificed a Môn Prince. The spirit of this victim, which is known as the Sule Nat-gyi, the Myosade of Rangoon, is still worshipped in the capital of the province. Burmese scholars trace the name to Chula, a Hindu deity, but they admit the sacrifice.

"When Mandalay was founded in 1857, the late Mindôn Min, who has generally been supposed to be remarkable for his orthodoxy in religion, as well as his comparative readiness to adapt himself to modern ideas, consulted, it is said, not the learned and pious amongst his Buddhist monks, but a famous fortune-teller, and in accordance with his advice a pregnant woman was slain at night in order that her spirit might become the guardian *nat* of the city. It is true that the greater influence that Buddhism has gained is admitted by the fact that the alleged human sacrifice is said to have been made at night. But whether this inhuman act was perpetrated or not, I have the authority of Colonel Cooke, the present Commissioner of the Northern Division, for saying that there is no doubt but that offerings of fruit and food were openly made by the King in the palace to the spirit of the dead woman, which was supposed to have taken the shape of a snake."—(*H. L. Eales in Census Report, 1892*).

A still more direct trace of the custom is seen in the stone figures grasping clubs in their hands which stand at the four corners of the city walls of Mandalay.

Whether this or other sacrifices were made at the foundation of Mandalay is not known, but it is certain that they were usual all

over Indo-China in former days, and they, were not unknown in Europe. The jars of various kinds of oil which stand in vaults under the corners of the Mandalay city wall represent, or stand in place of such sacrifices, just as the burying of newspapers, coins, and the like under foundation stones in Europe are a survival of the same superstition. The frontier between Kēngtūng and Kēng Hūng, now the boundary line between British and Chinese territory, was fixed some hundred of years ago, at Keng Law, by the burying of two men alive, one facing north the other facing south. In later and more civilized times two images of Buddha were placed back to back to mark the same place and fact. The head-collecting of the Wa is merely a form of recruiting spirits as local defenders. The more distinguished the man, or the more pious, the better a guardian spirit he proves. The Bulgarians of the Volga had the same idea, for Ibn Fozlan, quoted by Sir Henry Yule, says: "if they find a man endowed with special intelligence, then they say "'this man should save our Lord God;' and so they take him, run a "noose round his neck and hang him on a tree, where they leave "him till the corpse falls to pieces." Southey's poem of St. Ronnald, as Yule points out, indicates the same form of religion. His flock revered him—

"For he'll be made a saint of to be sure;
Therefore we thought it prudent to secure
His relics while we might,
And so we meant to strangle him one night."

From the same idea cannibalism became a form of religion. As the spirit of the sacrificial victim defended the town or bridge or whatever it might be, so the eating of a man endowed the consumer with the deceased's qualities and furthermore enlisted the spirit's active sympathies and interest in the resting place of his body. The Wa till within the last few years were persistently reported to be cannibals. The same story is told of the remoter and wilder Kachin tribes. It is even asserted of the Tai that in past times they ate human flesh. It seems very probable. It is not necessary to adopt Professor Robertson Smith's theory of a kind of savage sacrament "the eaten god." The worship of the dead, or the worship of demons, at one stage, leads naturally to cannibalism. It does not appear that any cannibals ever were so from depraved appetite. The diet was purely religious. If they ate a remarkable man, they absorbed his qualities and ensured his patronage. A remarkable man might be a strong man, a courageous man, a sorcerer, an inventor, a saint, an ancestor, or a stranger of superior race. The eating of parents was a very common form. Where could a father find a more honourable tomb than in the persons of his

children, or one less likely to be desecrated. The parents were spared the pains and miseries of old age and they had an added interest in guarding the welfare of their offspring. Given certain premises, the benefits of eating a warrior are undeniable, and therefore the Blackfeet Indians when they went on the war-path "hung the kettle on the fire." The advent of so remarkable a personage as a white man among dark-skinned races inevitably suggested the eating of him. But cannibalism, like Calvinism, is too stern and cold a faith to be popular, and it probably never lasted long as a State religion. There are, however, many traces of it, of which the taking and preserving of heads and the Red Indian custom of scalping are the most obvious. But it was thought that the possession of any part of an enemy placed that enemy in the power of the possessor. Each portion of the body was supposed to have also a portion of the spirit and to give the possessor the control of the whole. Hence the desire to prevent any part of the person getting into a stranger's possession, as for instance the combings of the hair and the parings of the nails. Most Burmans and Shans tie these to a stone and sink them in deep water, or bury them in the ground. In extreme cases the disposal of the saliva and of water in which clothes have been washed is superintended with anxious care. An instance of cannibalistic spirit worship occurred in the Shan States as recently as 1888. The captured rebel chief Twet Nga Lu was shot and buried by his sepoy guard. He had been a monk; he had a great name as a sorcerer, and he was elaborately tattooed. The nearest Shan *Sawbwa* dug up the corpse and boiled down the head and other portions of the body into a potent decoction. He was with difficulty dissuaded from sending a small phial of this for the consumption of the Chief Commissioner. The legendary tales of the Burmese and Shans are full of stories of the eating of bodies to obtain magical powers, extraordinary strength, or the ability to fly in the air.

Superstition simply means that which is left over, that which survives; and in this sense, some people see in the lights on the graves of Catholic Europe on All Soul's Eve, a survival of the fire lit near the grave of the savage for the spirit to warm itself by and to cook its food. Several races in Burma, among others the Karenni, observe a similar yearly festival. Beyond this there are some even who detect in the shaven heads and hairy shirts of religious devoteeism, a reminiscence of the mutilations at the primitive savage funeral ceremony and of the sacrifices which preceded the mutilations, and possibly of the cannibalism which accompanied the sacrifices. An extension of this train of reasoning makes mourning garments the modern substitute for holocausts of slaves to the manes

of the departed. More probably, however, mourning garments are simply a survival of the belief that it is necessary to deceive the ghosts of the departed. The devices are many. Some of the American Indian tribes regularly changed their names when a relative died. The Shans and Burmese only do so when the spirits prove troublesome. The Chinese and Annamese regularly buy the dead off and at the same time wear white clothes in mourning. The Kachins and other tribes put up entanglements to prevent the dead from entering their villages, and supply models of whatever they may be supposed to want. In the same way mourning weeds were intended to deceive the ghost or to frighten him by their sombre colour.

Fetichism in its lowest form, the worship of magical stones, feathers, shells, and jujus, of whatever kind, does not appear to exist among any of the Upper Burma races. It is usual to call fetichism idolatry of the grossest sort, and so it is when it is confined to the worship of odds and ends of matter. But it extends far beyond that; it includes the adoration of animals, so prominent in the religion of Egypt, and present, if less conspicuous, in the most ancient temples of Greece; it also includes the Sabaeism of Persia, the worship of the sun and moon and the stars, their children; the adoration of trees, streams, mountains, is all fetichistic. As a matter of fact all such worship is simply spirit-worship or the worship of the dead, if that form be preferred. The Burmans and Shans worship chiefly the spirit of the house and the spirits of the village, and their tree worship is gilded over with the legend that the Buddha died under the *Bo* tree. The hill people have their Eing Saung *nat* too, but the jungle is closer to them, and they have their dryads and hamadryads; their naiads and nereids and kelpies; their gnomes and kobolds and trolls; and they worship them regularly and minister to their wants, instead of telling stories about Undines and Pucks, Ariels and "good people" generally. The cults of the stars, of the dead, and of plants and animals are interlaced by the strange metaphysical processes of wild men. It is profitless to agree with some students in the belief that fetichism is one of the earliest traceable steps by which men climbed to higher conceptions of the supernatural, or to join Professor Max Müller in the theory that fetichism is a parasitical growth, or a corruption of religion. It has left its traces everywhere in the world. The Glastonbury Thorn, which grew from the staff of Joseph of Arimathea, and the trees of Liberty of France and America may be compared with the sacred trees of Zoroaster, the Oak of Hebron, the Devil trees of Africa, the *Bawdibin* generally, or the particularly sacred one which grew from the twig which Sakya had used as a tooth-brush. The Wa are particularly fond of rearing the *Ficus*

religosa, not because they know anything about the Buddha Gaudama, but because they believe in the tame country that the village *nat* lives in it, and in the wild country because it is the most convenient tree in which to hang up heads to blanch for the village avenues. Everywhere in the hills dark coppices or prominent trees have shrines in them, where Kachins, Shans, Wa, A-hka, all the hill tribes, worship and make offerings. This may be called tree-worship, but it is none the less demonolatry. The cult of the banian may be compared wtth the Christian legend of the Arbre Sec, or Dry Tree, of which Sir John Maundevile tells us:"—

"A lytille fro Ebron is the Mount of Mambre, of the whyche the Valeye taketh his name. And there is a Tree of Oke that the Sarazines clepen *Dirpe*, that is of Abraham's Tyme, the which men clepen *The Drye Tree.* And theye seye that it hath ben there sithe the beginnynge of the World; and was sumtyme grene and bare leves, unto the tyme that Oure Lord dyede on the Cros; and thanne it dryede; and so dyden alle the Trees that weren thanne in the World. And summe seyn be hire Prophecyes that a Lord, a Prynce of the West syde of the World, shalle wynnen the Lond of Promyssioun, *i.e*, the Holy Lond, with Helpe of Christene men, and he shalle do synge a Masse under that Drye Tree, and than the Tree shall wexen grene and bere both Fruyt and Leves. And thorghe that Myracle manye Sarazines and Jewes schulle ben turned to Christene Feithe. And, therfore, they don gret Worschipe thereto, and kepen it fulle besyly. And alle be it so that it be drye, natheless yit he berethe gret virtue."

It may be noted that some authors have connected tree worship with cannibalism in this way. The seeds were made idols and were eaten as though they were the bodies of their gods and so communicated their powers. The significance arose because of the mysterious vitality of a seed and its germinating power. However that may be, there is no doubt that primitive fetichism survives in the use of charms, talismans, amulets, and seal rings, no less among dacoits and savage warriors than with the betting man and his lucky six-pence, and the monarch who on coronation is seated on the sacred stone of Scone, doubtless as much a fetich stone as those which are seen in Wa villages. Tattooing and similar forms of personal adornment are fetichistic survivals, and so are the heraldic devices on many national flags and the armorial bearings of many families.

There are therefore abundant traces of fetichism not only among the hill tribes, but in Burma, and it is also clear that fetichism is ubiquitous, but we can hardly say that any single tribe consists of fetich worshippers and nothing else. Totemism also shows itself in the prescribed form of names for Shan and Kachin children and in the changing or concealing of personal names, but so far as is yet known there is no tribe which habitually takes its

family name, or has crests and badges taken from some natural object, plant, or animal, though the limiting of marriages between the inhabitants of certain villages only, practised both by tribes of Karens and Kachins, is no doubt the outgrowth of this totem idea.

But as far as animal worship, exogamy, and descent claimed through females are concerned the signs are abundant. What Backofen calls *Hetärismus* is so prevalent that there is often great uncertainty of blood-ties and especially of male parentage. The wisest child is not expected to know his own father and so kinship is reckoned through women. Thus, as in ancient Athens and amongst the Hebrews of Abraham's time, marriages between half-brothers and half-sisters are permitted, and in the case of the Burmese kings were even prescribed. But there are no such wide prohibitions of marriage as exist among the Hindus, where union with one of the same *gotra* name is not permitted, or among the Chinese, where males and females of the same *hsing* or surname will never intermarry, though their ancestors for thousands of years may never have known each other. The direct converse indeed appears among the Sawng Tung and certain other Karen tribes, where marriage is only permissible between the inhabitants of an extremely limited number of villages, and all the rest of the world is put out of bounds. So also with the Kachins.

There are abundant traces of the custom of capturing wives. This custom is always taken to be a proof of the early scarcity of women. Apparently Upper Burma women have never been scarce and they certainly are not coy, but among the hill tribes signs of the old custom are widespread.

Mr. Andrew Lang in his *Making of Religion* has propounded a new theory. He has often told us that he does not agree with the investigators who trace the rudimentary ideas of religion to the belief in the ghosts of the dead or in dreams. Such speculations are no doubt imperfect and dubious, but it does not appear that Mr. Lang's theory finds much corroborative evidence among the hill tribes. He compares the sorcery, magic, and enchantments of the savage with clairvoyance and telepathy, and maintains that many of the phenomena of mesmerism and hypnotism are survivals or recrudescences of spiritual or abnormal incidents of savage life. The modern medium, he thinks, is merely working back to the primitive diviner. Possibly this theory of comparative religion may find support when we know more of the mysteries of some of the hill religions. It is at any rate worth bearing in mind.

It is quite impossible to label the different hill-tribes and to say that such and such a race worships its ancestors, that another worships spirits generally, or one particular spirit, that others

worship trees, animals, stocks and stones, or the heavenly luminaries. They are all acquainted with dreams, visions, magic, the apparitions of the dead. Some of them are very degraded; none of them are by any means primitive savages; but they all have a barbaric philosophy which teems with evidences of the supposed inter-relation and commingling of life of man and brute and plant, and of things common to man and to the phenomena of nature, whether fixed or moving. Early religions are selfish and not disinterested. The worshipper is not contemplative so much as eager to gain something to his advantage. His acts of worship are intended to secure good luck and propitiate fortune, to obtain fine weather, good health, heavy harvest, revenge or success in love affairs. Luck is to be secured in various ways—by sacrifices of men or animals, by presents of food (animal or vegetable), by superstitions, candles and propitiations after the manner of Louis XI, or by adherence merely to old unvarying rituals of forgotten signification. All the religions run into one another; fetichism, animism, the animal worship of the Egyptians and others, the doctrine of transmigration, the Sabaeism of the Persians; they are all only stages in the progress of religious evolution, and the highest, if Buddhism as a system of philosophy may be considered the highest, retains traces of its origins. The primary religion of childish superstitions underlies them all. This is of course greatly helped by the way in which conversions were brought about. The king became converted and he ordered his people to follow his example. St. Augustine in England, St. Boniface in Germany, Vladimir or Jaroslaf in Russia, had whole villages baptized in groups. Nawrahta made all his subjects give alms to the monks and learn doxologies to say at the temples. In all cases the pagan peasants have only slowly lost, if they have lost at all, their primary semi-savage ways of thought and worship under the secondary varnish of the State religion.

There are plenty of survivals in Europe; the mistletoe, the yule log, the Christmas tree are all purely pagan, but we have forgotten as completely that they ever had anything of religion about them as we have that miscreant is a crusader's word or that pagan means countrified.

To the Burman on the contrary, and especially to the Upper Burman, *nat* worship is the most important thing. Every monastery has cloths put over the heads of its posts as a covering for the *nats*, equally with the house posts, or the supports of a bridge out in the jungle. Spirit shrines stand close up against pagodas; the monks take part in superstitious rites to secure rain or what not. They are often the most expert tattooers and astrologers and

fortune-tellers. The Burman has much more faith in the ascertaining of lucky and unlucky days and in the deductions from his horoscope than in the virtue of alms and the efficacy of worship at the pagoda.

Such assistances to religion as omens from the flight of birds, the peculiarities of entrails, and the appetite of fowls, which the Romans called *signa ex avibus, ex extis* and *ex tripudiis*, and accepted as guides from the mouths of their *auspices*, and *haruspices* and *augures*, have puzzled many people as instances of childishness in a practical and eminently sensible people, and the fact that savage races in many places do the same thing, so far from explaining the matter, only made the puzzle greater. It is not as if the slaughtering of the fowl or other creature were conducted as a solemn sacrificial act and the inspection of its bones and liver looked upon as a sort of sermon or commentary, and observations on the flight and the feeding of fowls might be taken at any time and not merely after fasting and prayer, when the omens might have been looked on as a benediction or a banning, or perhaps merely as a species of pastoral. The Karen tribes and the Wa very often do not even kill a fowl specially for a particular consulting of the fates. They use bones which are often grimed with the smoke of years and have an established reputation. Yet there is nothing to show that these bones, kept in the case of the Wa chiefs in carved bamboo phials, have been blessed or consecrated in any way, or that the fowl had any history about it, or was looked upon as an incarnation of an ancestor, or a noted sorcerer or leader.

The custom is nowhere a part of the religion of the country and never appears to have been so, any more than palmistry or thought-reading are. Indeed it would appear that Cicero thought the whole system discreditable, and as absurd as many people think the crossing of a gypsy's palm with silver on Epsom Downs, for he says (de. Div. i, 52-118) *Non interesse deum singulis jecorum fissis aut avium cantibus, neqe enim decorum est, nec diis dignum.*

But it is clear that there must have been some reason for all this unreason and it seems to have been discovered by Rudolph von Jhering in his *Vorgeschichte der Indo-Europäer*. He suggests that all such superstitions find their explanation in the circumstances attending the migration of the people. Thus when the emigrants came southwards they would find their onward march barred by a mountain chain which they could not possibly climb with their wives and their children and their flocks. They would know that there are hardly any mountains without passes made by water or existing naturally. In an inhabited country these would be pointed out by

guides, but where there were no inhabitants they had to trust to their own woodcraft. It is well known to naturalists that birds in their annual migrations always pass mountain ranges at their lowest points, and this was no doubt a perfectly familiar fact to primitive savages, however novel it may be to dwellers in cities. The wanderers therefore often found their way out of difficulties by observing how the birds flew. They discovered the pass and so saved themselves from perishing of starvation or dying at the hands of a pursuing enemy. Their wanderings no doubt lasted for years, and so the habit of watching how the birds flew became engrained in the old and grew up with the young. Again, when they came into a perfectly unknown country, from the deserts of the Roof of the World, or from the heights of the Himalayas, to sub-tropical hills, or wide plains, they would come upon a perfectly new vegetation and fauna. To find out what water was fit to drink, what plants were poisonous, and what fruits were good to eat, they would have recourse to the fowls again, either to their domesticated birds and animals, or to those of the new country. The grain and the berries would be thrown to the fowls and the result would guide them. And even beyond this, the character of the intestines of animals would disclose to experienced eyes the healthfulness or otherwise of the climate, and the richness or poorness of the fodder. The size and colour of the liver, the gizzard, the heart would soon become infallible signs to the expert.

Thus the first wandering swarms had to watch nature carefully, not merely the stars and the clouds and the winds and sounds of distant thunder, to determine whether the horde should march next day, nor the footprint of wild beasts, of tigers, and wolves and snakes and even of foxes and deer, to determine whether the camp should be protected or not, or to find out where water was to be had, which was the origin of the *signa pedestria,* and all the superstitions about beasts in the path, but every movement of every living thing and even the appearance of the inside of the animals they killed for food. The necessity of all this was firmly impressed on them and the remembrance of it lasted long after they had settled down permanently. All the circumstances of these eminently practical and sensible observations were remembered long after there was any necessity for them, and, even later still, long after their purpose and meaning was forgotten. Moreover, it was to the interest of augurs and haruspices, of fortune-tellers and sorcerers and chiefs, to retain any observances which would gain them credit, or give them a hold over the people. The examination of fowls' livers would naturally lead to an inspection of their bones. The theory seems incontestible, and it is unnecessary to insist upon the fact that all the nomad

tribes, who wander from range to range, as their hill clearings are worked out, never move without consulting chicken bones. They have forgotten that once the birds were the guides and saviours of their ancestors; they do not know the reasoning which should be followed or the processes which should be observed; what was once a thoroughly business-like proceeding has become merely a superstitious or magical observance, and it is extended to every act of their daily life. But English people have no less forgotten, when they repeat the magpie rhyme:

> "One for sorrow; two for mirth;
> Three, a wedding; four, a death."

Most kinds of divination have come from the same source: meteoromancy, austromancy, oneiromancy, and what not, and others have risen out of them by analogy. Thus sortilege, the drawing of lots, in process of time led to the *Sortes Virgilianae*, to bibliomancy, and to stichomancy generally, while in another direction it led to abracadabra, mumbo jumbo, magic words, and sorcerer's jargon, which appear not only in savage ritual, but in actual words and letters of power tattooed on the skin, or let in under it, on pieces of silver or on stones.

Astrology might easily become very prominent during the times of migration, but it might have arisen equally among a perfectly stationary people. When man was looked on as the world in miniature, it was thought that the movements of the world and of man corresponded, and, if one could be ascertained, the other could be easily inferred. Thus it was thought the events of a man's life could be inferred from the corresponding movements of the stars.

The Burman Court astrologers and astronomers were all Brahmans, who were descendants of captives from Manipur, Assam, or Arakan, and of those foreigners who were in the country from the time of the Pagān dynasty. They all lived in or near the capital, but they sent out disciples to various parts of the country. The Sanskrit and Bengali works found with them belong to the Tantrasastras, Jyotisastras, and Kamasastras of Gangetic India, according to Forchhammer, and their chief study is the Samaveda. Their methods were entirely based on the Hindu system of astronomy. Among other things, Sangermano tells us, "they were certainly acquainted with that observation made by the ancient astronomers anterior to the celebrated Hipparchus, that after a period of 223 lunar months, or eighteen years and ten days, the eclipses of the sun and moon return in the same order and magnitude." It was they who worked the clepsydra and who calculated the incidence of the year and the intercalary months, and in addition to this they

drew up the horoscopes in the capital and calculated lucky days from the stars and told fortunes as Indian Brahmans have done from the days of Strabo and Fa Hian, and much of their craft is incorporated in the Burmese *Deitton*, of which Sangermano gives a summary. But there were too few of them to be spared away from the capital, and their disciples were not many, and those who could calculate in any but the most obvious charlatan fashion were still more scarce.

There is reason to believe that in most country districts of Burma, and certainly all over the north and wherever Shan influence was most exercised, the means of calculating luck were derived from the Shan *Hpè-wan*. This is simply the Shan cycle, the system of counting time by revolutions of sixty years, which still is used by the Chinese, the Siamese, Cambodians, Annamese, and other races. The system as applied to chronology is discussed in the chapter on the Tai (*q.v.*). The months and the days were also reckoned on this calendar, and upon this the Indo-Chinese astrologers have built their system.

The Taoist priests of China now-a-days are little better than fortune-tellers and their divinations are made from the same cycle table. Just as the Shans are considered the best tattooers, so the Shan soothsayers are considered the most learned, and all their prognostications are worked out from the *Hpè-wan*. Almost all the Burman superstitions about the *Nagahlè*, the path of the dragon, which regulates lucky days, and the *Mingala Linga*, which control marriages, are taken direct from this Shan table. There is little doubt that the *Hpè-wan* is the same as the Jovian cycle, and therefore the system corresponded with that of the Pônnas, who were learned in the wisdom of the Chaldees. The Shan diviners therefore easily maintained a superiority over what pupils of the Brahmans drifted out of the capital, and now that the Pônnas will inevitably die out, the *Hpè-wan* has an assured triumph before it. It will be used to work out horoscopes, to determine the suitability of marriages, partnerships, and undertakings generally, and in fact to do everything which in the days of the Burmese monarchy rested with Pônnas as the acknowledged masters of the art of divination. The table used is arranged as follows:—

Kap-saü. ၵပ်ၸႂ်	Lap-pao. လပ်ပဝ်	Hai-yi. ႁႆယီ	Möng-mao မိူင်မဝ်	Pük-hsi. ပိုၵ်သီ	Kat-hsaü. ၵတ်သႂ်	Kut-hsi-nga. ၵုတ်သီငႃ	Hông-m ႁုင်မုတ်	Tao-hsan. တဝ်သၼ်	Kā-hao. ၵႃႁဝ်
Kap-mit. ၵပ်မိတ်	Lap-kaü. လပ်ၵႂ်	Hai-saü. ႁႆၸႂ်	Möng-pao. မိူင်ပဝ်	Pük-yi. ပိုၵ်ယီ	Kat-mao. ၵတ်မဝ်	Kut-hsi. ၵုတ်သီ	Hông-hsaü ႁုင်သႂ်	Tao-hsi-nga. တဝ်သီငႃ	Kā-môt. ၵႃမုတ်
Kap-hsan. ၵပ်သၼ်	Lap-hao. လပ်ႁဝ်	Hai-mit. ႁႆမိတ်	Möng-kaü. မိူင်ၵႂ်	Pük-saü. ပိုၵ်ၸႂ်	Kat-pao. ၵတ်ပဝ်	Kut-yi. ၵုတ်ယီ	Hông-mao. ႁုင်မဝ်	Tao-hsi. တဝ်သီ	Kā-hsaü. ၵႃသႂ်
Kap-hsi-nga ၵပ်သီငႃ	Lap-môt. လပ်မုတ်	Hai-hsan. ႁႆသၼ်	Möng-hao. မိူင်ႁဝ်	Pük-mit. ပိုၵ်မိတ်	Kat-kaü. ၵတ်ၵႂ်	Kut-saü. ၵုတ်ၸႂ်	Hông-pao. ႁုင်ပဝ်	Tao-yi. တဝ်ယီ	Kā-mao. ၵႃမဝ်
Kap-hsi. ၵပ်သီ	Lap-hsaü. လပ်သႂ်	Hai-hsi-nga. ႁႆသီငႃ	Möng-môt. မိူင်မုတ်	Pük-hsan. ပိုၵ်သၼ်	Kat-hao. ၵတ်ႁဝ်	Kut-mit. ၵုတ်မိတ်	Hông-kaü. ႁုင်ၵႂ်	Tao-saü. တဝ်ၸႂ်	Kā-pao. ၵႃပဝ်
Kap-yi. ၵပ်ယီ	Lap-mao. လပ်မဝ်	Hai-hsi. ႁႆသီ	Möng-hsaü မိူင်သႂ်	Pük-hsi-nga. ပိုၵ်သီငႃ	Kat-môt. ၵတ်မုတ်	Kut-hsan. ၵုတ်သၼ်	Hông-hao. ႁုင်ႁဝ်	Tao-mit. တဝ်မိတ်	Kā-kaü. ၵႃၵႂ်

As is explained in the chapter on the Tai the first year of the cycle begins at Kap-saü and goes on regularly down to Ka-kaü, the last year of the cycle, and the next cycle begins at Kap-saü again. The months and days are counted in the same way and run on through the table in the same way. Thus New Year's day of the first

cycle would be Kap-saü year, Kap-saü month, Kap-saü day; and the first day of the second month would be Kap-saü year, Lap-pao month, Kap-hsi-nga day; while the date for New Year's day of the second cyclical year would be Lap-pao year, Hai-saü month, Kat-mot day. It will be noted that the twelve "branches" appear on the table in accordance with the knight's move at chess, a fact which is not lost on the soothsayers and affords them much gratification.

Our British Shans who have taken their Buddhism from the Burmese have adopted the *Sangkyan* days as the beginning of the year, so that there is a complication of what was the original system, especially as they have retained the old Tai months, which begin in November—Lön Sēng, their first month, corresponds to the Burmese *Nadaw*, our November-December; Lön Kam to *Pyatho*, December-January, and so on. This creates great confusion from the point of view of the almanack, but it merely adds zest to the table as a Sibylline oracle, and warns off amateurs. The fact that the first month of the year begins in the latter part of November and that New Year's day falls about the middle of April, obviously renders circumspection necessary and prevents the first casual possessor of a *Hpè-wan* from setting up as an expert. But in any case the circumstances that the old Tai months were lunar and that the odd months had twenty-nine and the even thirty days, so as to complete fifty-nine days in two months, must always have prevented the scheme from being too simple. Moreover, the seven or eight intercalary months added every nineteen years furnished more complications.

Although they have no weeks, any more than the Burmese or the Siamese, they have names for the days of the week and even have the half-day Rahu, from noon to midnight on Wednesday. Whether they got this from the Burmese or gave it to them has yet to be discovered. On the horoscopes the days of the week are represented by numbers and by symbols as follows:—

Day of the week.	Numerical figures.	Symbolical signs.
Sunday	1	*Garuda* (*kalön*).
Monday	2	Tiger (*hsö*).
Tuesday	3	Lion (*sanghsi*).
Wednesday	4	Elephant (*sang*).
Thursday	5	Rat (*nu*).
Friday	6	Ox (*wö*).
Saturday	7	Sea-dragon (*topai*).
Rahu	8	Elephant without tusks (*haing*).

The disposition of a person is governed by the day on which he was born, as it is with the Burmese.

The following are *primâ facie* well-matched days : Sunday, Thursday, and Friday ; Monday and Wednesday ; Tuesday and Saturday ; and Thursday and Rahu. This must be remembered in selecting a wife or a husband and in choosing a friend or a partner on a journey or in trade by persons born on these days.

The following are adverse days : Sunday and Tuesday ; Monday and Thursday ; Friday and Saturday ; and Wednesday and Rahu.

The following are neither well-matched nor hostile days : Sunday and Friday ; Tuesday and Thursday ; Monday and Saturday ; and Tuesday and Rahu.

The position of the dragon (*topai* or *naga*) during the month must always be noted and care must be taken to avoid facing its mouth in travelling, trading, and enterprises generally.

The days that end with *saü* (ၸႂ်), *pao* (ပဝ်), *mao* (မဝ်), *hsinga* (သိင်ၵ), *môt* (မုတ်), and *mēt* (မိတ်) indicate that the dragon's jaws are turned away, while the days that end with *yi* (ယီ), *hsi* (သီ), *hsan* (သၢၼ်), *hô* (ႁဝ်), and *kaü* (ၵႂ်) denote facing towards its mouth.

The position of the dragon throughout the year is indicated by the table, and all those building houses, trading, or travelling must see that they know it. In the month of Lön Sēng, I month (*Nadaw*, corresponding to November-December), Lön Kam, II month (*Pyatho*, corresponding to December-January), and Lön Hsam, III month (*Tabodwè*, corresponding to January-February) the *naga* faces towards the south with the tail towards the north, the breast towards the west, and the back towards the east.

In the months of Lön-hsi, IV month (*Tabaung*), Lön-ha, V month (*Tagu*), and Lön-hôk, VI month (*Kasôn*) it faces due west with the tail towards the east, the breast to the north, and the back to the south.

In the months of Lön Sīt, VII month (*Nayôn*), Lön-pet, VIII month (*Waso*), and Lön-kao, IX month (*Wagaung*) it faces north with the tail towards the south, the breast towards the east, and the back towards the west.

In the month of Lön-hsip, X month (*Tawthalin*), Lön-hsip-it, XI month (*Thadingyut*), and Lön-hsip-hsawng, XII month (*Tazaungmôn*) it faces due east, with the tail due west, the breast due south, and the back towards the north.

The following are lucky and unlucky days, and in purchasing cattle care should be taken that the transaction takes place on the

lucky days. The days that end with the word *saü* (လႂ်), *e.g.*, Kap-saü (ကပ်လႂ်), Hai-saü (ႁႆလႂ်), Pük-saü (ပိုၵ်လႂ်), Kut-saü (ၵုတ်လႂ်), and Tao-saü (တဝ်လႂ်) are all unlucky days, and cattle purchased on these days will not thrive well.

The days that end with the word *pao* (ပဝ်), *e.g.*, Lap-pao (လပ်ပဝ်), Möng-pao (မိုင်ပဝ်), Kat-pao (ၵတ်ပဝ်), Ho-pao (ႁူဝ်ပဝ်), and Ka-pao (ၵႃပဝ်) are all lucky days, and cattle purchased on these days will turn out well.

The days that end with the word *yi* (ယီ), *e.g.*, Hai-yi (ႁႆယီ), Pük-yi (ပိုၵ်ယီ), Kut-yi (ၵုတ်ယီ), Tao-yi (တဝ်ယီ), and Kap-yi (ကပ်ယီ) are all unlucky days.

The days that end with the word *mao* (မဝ်), *e.g.*, Möng-mao (မိုင်မဝ်), Kat-mao (ၵတ်မဝ်), Hông-mao (ႁူင်မဝ်), Ka-mao (ၵႃမဝ်) and Lap-mao (လပ်မဝ်) are also all unlucky days, and cattle purchased on these days are apt to fall and die in ditches.

The days that end with the word *hsi* (သီ), *i.e.*, Pük-hsi (ပိုၵ်သီ), Kut-hsi (ၵုတ်သီ), Tao-hsi (တဝ်သီ), Kap-hsi (ကပ်သီ), and Hai-hsi (ႁႆသီ) are all lucky days, and cattle purchased on these days will thrive well.

The days that end with the word *hsaü* (သႂ်), *i.e.*, Kat-hsaü (ၵတ်သႂ်), Hong-hsaü (ႁူင်သႂ်), Ka-hsaü (ၵႃသႂ်), Lap-hsaü (လပ်သႂ်) and Möng-hsaü (မိုင်သႂ်) are all unlucky days, and cattle purchased on these days will all die.

The days that end with the word *hsi-nga* (သီငႃ), *i.e.*, Kut-hsi-nga (ၵုတ်သီငႃ), Tao-hsi-nga (တဝ်သီငႃ), Kap-hsi-nga (ကပ်သီငႃ), Hai-hsi-nga (ႁႆသီငႃ) and Pük-hsi-nga (ပိုၵ်သီငႃ) are also unlucky days, and cattle purchased on these days will not thrive long.

The days that end with the word *môt* (မုတ်) and *hsan* (သၢၼ်), *i.e.*, Hông-môt (ႁူင်မုတ်), Ka-môt (ၵႃမုတ်), Lat-môt (လပ်မုတ်), Möng-môt (မိုင်မုတ်), and Kat-môt (ၵတ်မုတ်), and Tao-hsan (တဝ်သၢၼ်), Kap-hsan (ကပ်သၢၼ်), Hai-hsan (ႁႆသၢၼ်), Puk-hsan (ပိုၵ်

သၢင်), and Kut-hsan (ၵုတ်သၢင်) are all unlucky days, and cattle purchased on these days are apt to fall and die in ditches.

The days that end with the word *hao* (ႁဝ်), *i.e.*, Ka-hao (ၵႃႁဝ်), Lap-hao (လပ်ႁဝ်), Möng-hao (မိုင်ႁဝ်), Kat-hao (ၵတ်ႁဝ်), and Hông-hao (ႁူင်ႁဝ်) are all unlucky days for purchasing cattle.

The days that end with the word *mĕt* (မဵတ်), *i.e.*, Kap-mĕt (ၵပ်မဵတ်) Hai-mĕt (ႁႆမဵတ်), Pük-mĕt (ပိုၵ်မဵတ်), Kut-mĕt (ၵုတ်မဵတ်), and Tao-mĕt (တဝ်မဵတ်) are all very unlucky days, and cattle purchased on these days are apt to die of cattle disease.

The days that end with the word *kaü* (ၵိူဝ်), *i.e.*, Lap-kaü (လပ်ၵိူဝ်), Möng-kaü (မိုင်ၵိူဝ်), Kat-kaü (ၵတ်ၵိူဝ်), Hông-kaü (ႁူင်ၵိူဝ်), and Ka-kaü (ၵႃၵိူဝ်) are all unlucky days, and the cattle purchased on these days are apt to be easily lifted.

The spirits have a regular system of diet, which it is well to know, whether for the purpose of making offerings, or to guard what they may be particularly in want of on any given day.

On the 1st waxing day of the month the *nat* (ၽီ) eats *nats*, the 2nd the *nat* eats men, the 3rd the *nat* eats fowls, the 4th the *nat* eats ducks, the 5th the *nat* eats dogs, the 6th the *nat* eats pigs, the 7th the *nat* eats bulls, the 8th the *nat* eats buffaloes, the 9th the *nat* eats ponies, the 10th the *nat* eats elephants, the 11th the *nat* eats *nats*, the 12th the *nat* eats men, the 13th the *nat* eats fowls, the 14th the *nat* eats ducks, the 15th (the full-moon day) the *nat* eats dogs; and on the 1st waning day of the month the *nat* eats pigs, the 2nd the *nat* eats bulls, the 3rd the *nat* eats buffaloes, the 4th the *nat* eats ponies, the 5th the *nat* eats elephants, the 6th the *nat* eats *nats*, the 7th the *nat* eats men, the 8th the *nat* eats fowls, the 9th the *nat* eats ducks, the 10th the *nat* eats dogs, the 11th the *nat* eats pigs, the 12th the *nat* eats bulls, the 13th the *nat* eats buffaloes, the 14th the *nat* eats ponies, and the 15th (the waning of the moon) the *nat* eats elephants.

The following are also unlucky days—

The Yi (ယီ) days in Lön Sĕng.

The Mao (မဝ်) days in Lön Kam.

The Hsi (သီ) days in Lön Hsam.

The Hsaü (သိူဝ်) days in Lön Hsi.

The Hsi-nga (သီငႃ) days in Lön Ha.

The Môt (မုတ်) days in Lön Hôk.

The Hsan (သၢၼ်) days in Lön Sēt.

The Hao (ႁဝ်) days in Lön Pét.

The Mēt (မဵတ်) days in Lön Kao.

The Kaü (ၵႂ်) days in Lön Hsīp.

The Saü (ၸႂ်) days in Lön Hsīp-it.

The Pao (ပဝ်) days in Lön Hsīp Hsawng.

The following are also unlucky days and should be carefully noted by every one,—the twelfth waxing and the twelfth waning of any month if they fall on a Sunday, the 7th waxing and the 7th waning days of any month if they fall on a Friday, and the 6th waxing and the 6th waning days of any month if they fall on a Saturday.

The following are unlucky days in every case :—

The 8th waxing and the 8th waning days in Lön Ha (လိူၼ်ႁႃ), Lön Hôk (လိူၼ်ႁူၵ်), and Lön Sīt (လိူၼ်ၸဵတ်); the 7th waxing and the 7th waning days in Lön Pēt (လိူၼ်ပႅတ်), Lön Kao (လိူၼ်ၵဝ်), and Lön Hsip (လိူၼ်သိပ်); the 8th waxing and the 8th waning days in Lön Hsip-it (လိူၼ်သိပ်းဢဵတ်), Lön Hsip Hsawng (လိူၼ်သိပ်သွင်), and Lön Sēng (လိူၼ်ၸဵင်); and the 10th waxing and the 10th waning days in Lön Kam (လိူၼ်ၵမ်), Lön Hsam (လိူၼ်သၢမ်), and Lön Hsi (လိူၼ်သီ).

The following are the lucky and unlucky days throughout the month for building operations of any kind. The same creature presides over the day in any month, so that this table is invariable :—

1st waxing ; the Bilu (ၽီလူ) presides and the day is unlucky.

2nd waxing ; the sister *nat* (ၼၢင်ၽီ) presides and the day is lucky.

3rd waxing ; the Kalôn (ၵႃလုၼ်ႁဝ်) presides and the day is lucky.

4th waxing ; the elephant (ၸၢင်) presides and the day is unlucky.

5th waxing ; the Kalôn (ၵႃလုၼ်) presides and the day is lucky.

6th waxing ; the dog (မႃ) presides and the day is unlucky.

7th waxing ; the flying horse (မႃၶိင်ၽေႃ) presides and the day is lucky.

8th waxing; the beggar (ၵုၼ်ယွၼ်) presides and the day is unlucky.

9th waxing; the Bilu presides and the day is unlucky.

10th waxing; the King of Brahmas (ၶုၼ်ၿိမႃ) presides and the day is very lucky.

11th waxing; the King of Setkyas (ၶုၼ်သၵျႃး) presides and the day is very lucky.

12th waxing; the dog presides and the day is unlucky.

13th waxing; the king of Brahmas presides and the day is very lucky.

14 waxing; the Kalôn presides and the day is lucky.

Full moon; the King of Setkyas presides and the day is very lucky.

1st waning; the sister *nat* (ၼၢင်ၽီ) presides and the day is lucky.

2nd waning; the tiger (သိူဝ်) presides and the day is unlucky.

3rd waning; the fire *nat* (ၽီၾႆ) presides and the day is unlucky.

4th waning; the ox presides and the day is lucky.

5th waning; the elephant presides and the day is lucky.

6th waning; the Kalôn presides, and the day is lucky.

7th waning; the peasant (ၵုၼ်ထိုၼ်) presides and the day is unlucky.

8th waning; the flying horse presides and the day is lucky.

9th waning; the King of Brahmas presides and the day is very lucky.

10th waning; the Bilu presides and the day is unlucky.

11th waning; the dog presides and the day is unlucky.

12th waning; the King of Setkyas presides and the day is very lucky.

13th waning; the pig (မူ) presides and the day is unlucky.

14th waning; the King of Brahmas presides and the day is very lucky.

Change; the Kalôn presides and the dav is lucky.

Other unlucky days for building are:—

(1) The days that end with the word *yi* (ယိ) in Lön Seng (လိုၼ်ၸိင်), I month (*Nadaw*, corresponding to November-December).

(2) The days that end with the word *hsaü* (သႂ်) in Lön Kam (လိူၼ်ၵံ), II month (*Pyatho*, corresponding to December-January).

(3) The days that end with the word *hsi* (သီ) in Lön Hsam (လိူၼ်သံ), III month (*Tabodwè*, corresponding to January-February).

(4) The days that end with the word *mao* (မဝ်) in Lön Hsi (လိူၼ်သီ), IV month (*Tabaung*, corresponding to February-March).

(5) The days that end with the word *hsi* (သီ) in Lön Ha (လိူၼ်ႁႃ), V month (*Tagu*, corresponding to March-April).

(6) The days that end with the word *hsi* (သီ) in Lön Hok (လိူၼ်ႁူၵ်), VI month (*Kasôn*, corresponding to April-May).

(7) The days that end with the word *mao* (မဝ်) and *yi* (ယီ) in Lön Sēt (လိူၼ်ၸဵတ်), VII month (*Nayôn*, corresponding to May-June).

(8) The days that end with the words *hsaü* (သႂ်) and *hsi-nga* (သီငႃ) in Lön Pēt (လိူၼ်ပဵတ်), VIII month (*Waso*, corresponding to June-July).

(9) The days that end with the words *hsi* (သီ) and *hsi-nga* (သီငႃ) in Lön Kao (လိူၼ်ၵဝ်), IX month (*Wagaung*, corresponding to July-August).

(10) The days that end with the words *hsaü* and *yi* (ယီ) in Lön Hsīp (လိူၼ်သိပ်), X month (*Tawthalin*, corresponding to August-September).

(11) The days that end with the word *hsi* (သီ) in Lön Hsip-it (လိူၼ်သိပ်ဢဵတ်), XI month (*Thadingyut*, corresponding to September-October).

(12) The days that end with the words *hsaü* (သႂ်) and *yi* (ယီ) in Lön Hsīp Hsawng (လိူၼ်သိပ်သွင်), XII month (*Tasaungmôn*, corresponding to October-November).

As a general rule, apart from special considerations, the characteristics of the days are as follows :—

(1) *Kap-saü* (ၵပ်ၸႂ်), an unlucky day for business of any kind, but especially for purchasing cattle.

(2) *Lap-pao* (လပ်ပဝ်), an unlucky day for making baskets, celebrating marriages, travelling to distant places, and visiting other villages.

(3) *Hai-yi* (ႁႆယီ), a very unlucky day for preparing for war, for marriages, and for slaughtering cattle.

(4) *Möng-mao* (မိူင်မဝ်), an unlucky day for the construction of any building.

(5) *Puk-hsi* (ပုၵ်သီ), a very unlucky day for descending the bank of the river with a child in the arms and for using loose handled swords and spears.

(6) *Kat-hsaü* (ၵတ်သႂ်), the same as (5) *Puk-hsi* (ပုၵ်သီ).

(7) *Kut-hsi-nga* (ၵုတ်သီငႃ), an unlucky day for riding round the town, travelling to distant countries, and weaving cloth underneath the house.

(8) *Hông-môt* (ႁုင်မုတ်), an unlucky day for building cattle-folds and fencing villages.

(9) *Tao-hsan* (တဝ်သၢၼ်), an unlucky day for handling any weapon and collecting timber for building purposes, but a lucky day for preparing for war.

(10) *Ka-hao* (ၵႃႁဝ်), an unlucky day for combing and tying up the hair of the head.

(11) *Ka-mit* (ၵႃမိတ်), an unlucky day for stitching clothes, going to war, and digging soil for cultivation.

(12) *Lap-kaü* (လပ်ၵႂ်), an unlucky day for looking in the mirror and for transplanting plants, but a lucky day for preparing for war.

(13) *Hai-saü* (ႁႆၸႂ်), an unlucky day for making arrangements for irrigation, but lucky for preparing for war.

(14) *Möng-pao* (မိူင်ပဝ်), an unlucky day for testing drums and other musical instruments.

(15) *Pük-yi* (ပုၵ်ယီ), an unlucky day for collecting materials for building and fencing purposes, but a good day for preparing to go to war.

(16) *Kat-mao* (ၵတ်မဝ်), an unlucky day for the construction of any building, for testing drums and other musical instruments, and travelling to a distant country for trade, but a lucky day for keeping a boat at the ferry.

(17) *Kut-hsi* (ၵုတ်သီ), a lucky day for irrigation and the construction of any building.

(18) *Hông-hsaü* (ႁုင်သႂ်), an unlucky day for testing drums and other musical instruments and cultivating land.

(19) *Tao-hsi-nga* (တဝ်သီငႃ), an unlucky day for transacting any kind of business.

(20) *Ka-môt* (ၵႃမုတ်), a lucky day for handling weapons and preparing for war.

(21) *Kap-hsan* (ၵပ်သၢၼ်), an unlucky day for travelling to a distant country for trade, but a lucky day for construction of any building.

(22) *Lap-hao* (လပ်ႁဝ်), an unlucky day for repairing old furniture.

(23) *Hai-mit* (ႁႆမိတ်), an unlucky day for marriages.

(24) *Möng-kaü* (မိုင်ၵႂ်), an unlucky day for collecting timber for construction of any building, but a lucky day for preparing for war.

(25) *Pük-saü* (ပုၵ်သႂ်), an unlucky day for engagements of any kind, but a lucky day for constructing cattle-folds.

(26) *Kat-pao* (ၵတ်ပဝ်), an unlucky day for constructing cattle-folds and celebrating marriages and preparing for war.

(27) *Kut-yi* (ၵုတ်ယီ), an unlucky day for giving children in marriage and testing weapons, but a lucky day for breeding cattle and travelling to a distant country for trade.

(28) *Hông-mao* (ႁုင်မဝ်), an unlucky day for testing weapons and listening to music.

(29) *Tao-hsi* (တဝ်သီ), an unlucky day for sleeping in strange houses.

(30) *Ka-hsaü* (ၵႃသႂ်), an unlucky day for roaming about the town with a child in the arms and for engaging servants, but a lucky day for preparing for war.

(31) *Kap-hsi-nga* (ၵပ်သီငႃ), an unlucky day for descending the bank of a river with a child in the arms, but a lucky day for beginning irrigation work.

(32) *Lap-môt* (လပ်မွတ်), an unlucky day for cultivating lands and fencing gardens.

(33) *Hai-hsan* (ႁႃႇသၢၼ်), an unlucky day for building a city or a town.

(34) *Möng-hao* (မိူင်ႁဝ်), an unlucky day for preparing for war, cultivating lands, and crossing a river with a boat.

(35) *Puk-mit* (ပုၵ်မိတ်), an unlucky day for preparing for war.

(36) *Kat-kaü* (ၵတ်ၵႂ်), an unlucky day for the construction of any building and for travelling to a distant country for trade.

(37) *Kut-saü* (ၵုတ်ၸႂ်), a lucky day for celebrating marriages.

(38) *Hông-pao* (ႁူင်ပဝ်), an unlucky day for weaving any kind of cloth.

(39) *Tao-yi* (တဝ်ယီ), a lucky day for preparing for war.

(40) *Ka-mao* (ၵႃမဝ်), an unlucky day for weaving any kind of cloth and making a bedstead.

(41) *Kap-hsi* (ၵပ်သီ), a lucky day for dyeing cloth and making a bedstead.

(42) *Lap-hsaü* (လပ်သႂ်), an unlucky day for staying as a guest in another's house.

(43) *Hai-hsi-nga* (ႁႃႇသီငႃ), an unlucky day for felling trees and converting them into timber for the construction of bridges.

(44) *Möng-môt* (မိူင်မွတ်), an unlucky day for facing any enemy.

(45) *Pük-hsan* (ပုၵ်သၢၼ်), an unlucky day for preparing for war.

(46) *Kat-hao* (ၵတ်ႁဝ်), an unlucky day for cultivating lands and preparing for war.

(47) *Kut-mit* (ၵုတ်မိတ်), an unlucky day for giving children in marriage and making new clothes.

(48) *Hông-kaü* (ႁူင်ၵႂ်), an unlucky day for planting vegetables in the garden.

(49) *Tao-saü* (တဝ်ၸႂ်), an unlucky day for marriage engagements, but a lucky day for preparing for war.

(50) *Ka-pao* (ၵႃပဝ်), an unlucky day for the construction of stockades and fencing around houses.

(51) *Kapyi* (ၵပ်ယီ), an unlucky day for travelling to a distant country for trade.

(52) *Lap-mao* (လပ်မဝ်), an unlucky day for the construction of any building and cultivating any land.

(53) *Hai-hsi* (ႁႆသိ), an unlucky day for planting sugarcane in the garden, arranging for irrigation, dressing richly, and celebrating marriages.

(54) *Möng-hsaü* (မိုင်သဵ), an unlucky day for going to the fields with a child in the arms and instituting a case in Court.

(55) *Pük-hsi-nga* (ပိုၵ်သိငါ), an unlucky day for preparing for war, but a lucky day for purchasing cattle.

(56) *Kat-môt* (ၵတ်မုတ်), a lucky day for the construction of cattle-folds.

(57) *Kut-hsan* (ၵုတ်သၼ်), a lucky day for the construction of stockades.

(58) *Hông-hao* (ႁုင်ႁဝ်), a lucky day for the construction of cattle-folds and walls around the village.

(59) *Tao-mit* (တဝ်မိတ်), an unlucky day for travelling to a distant country to trade, but a lucky day for the construction of any kind of building.

(60) *Ka-kaü* (ၵါၵႂ်), a very unlucky day for any kind of business.

When a child is born, it is essential to note under which of the following *nāk-hkat* (ၼၵ်ၡတ်) it is. These constellations are twenty-seven in number. Their names are given in Pāli and in the *quasi*-Pāli-Tai form.

(1) Assunda, Ahsawani (အသဝါၼီ).
(2) Berana, Hparani (ၽရၼီ).
(3) Kæti, Kyawt-tika (ၵျွတ်တိၵါ).
(4) Rehera, Sawhani (ေရာႁၼီ).
(5) Muwasirisa, Mēkkahsi (မိၵ်ၵသိ).
(6) Ada, Atra (အတြါး).
(7) Punawasa, Pôngnahpukhsu (ပုင်ၼၽုၵ်သု).
(8) Pusa, Pôngnahpukhsa (ပုင်ၼၽုၵ်သ).
(9) Aslisa, Ahsalikhsa (အသလိၵ်သ).
(10) Mánekata, Mahka (မါၶ).
(11) Puwapul, Pôppahparakôngni (ပုပ်ၽရၵုင်ၼီ).

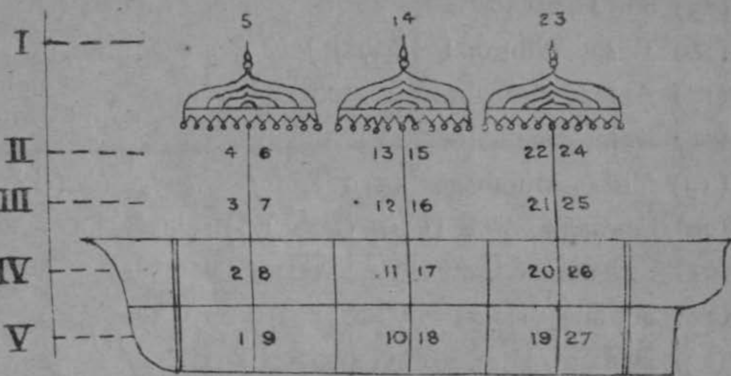
(12) Utrapal, Ôktrahparakôngni (ဢုၵ်တြႃၽရၾုင်ၼီ).
(13) Hata, Hashataha (ႁႃသတႁ).
(14) Sita, Sēktra (လိၵ်တြႃ).
(15) Sá, Hsati (သတိ).
(16) Wisa, Wihsahka (ဝိသၶႃ).
(17) Anura, Anulahta (ဢၼုလတႃ).
(18) Deta, Sehta (ၸေထ.)
(19) Mula, Murahsan (မူရသံ).
(20) Puwasala, Pôkpahsan (ပုၵ်ပသံ).
(21) Utrasula, Ôktrahsan (ဢုတြႃသံ).
(22) Suwana, Hsarawan (သႃရဝံ).
(23) Denata, Htanahsēkta (ထၼသိၵ်ထ).
(24) Siyáwasa, Hsatapēkhsa (သတပိတ်သ).
(25) Puwaputupa, Pôkpaparapük (ပုၵ်ပပရပိုၵ်).
(26) Utraputupa, Ôktraparapük (ဢုၵ်တြႃပရပိုၵ်).
(27) Rewati, Lewati (လေဝတိ).

On broad lines the following constellations preside over the months :—

Lön Hsīp-it (XI month), *Assunda* (ဢသဝႃၼီ)
Lön Hsīp Hsawng (XII month), *Kæti* (ၵြတ်တိၵႃ).
Lön Seng (I month), *Pusa* (ပုင်ၼေၽုၵ်သ).
Lön Kam (II month) and Lön Hsam (III month), *Máne Kata* (မႃၶ).
Lön Hsi, (IV month), *Puwapul* (ပုၵ်ပၽရၾုင်ၼီ).
Lön Ha (V month), *Sita* (လိၵ်တြႃ).
Lön Hôk (VI month), *Wisa* (ဝိသၶႃ).
Lön Sēt (VII month), *Deta* (လိထ).
Lön Pēt (VIII month), *Utrasala* (ဢုၵ်ႃတြသံ).
Lön Kao (IX month), *Aslisa* (ဢသလိၵ်သ).
Lön Hsīp (X month), *Puwaputupa* (ပုၵ်ပပရပိုၵ်).

The annexed longitudinal section of a boat shows the respective positions of the *nakats* and the way in which they influence the lives of those born under them.

The three masts represent *hti hkam* (ထီးၶမ်), three golden umbrellas.



(*a*) Those who were born under the constellations at the top of the umbrellas are subjected to hardships in the sun throughout their lives.

(*b*) Those who were born under the constellations immediately below the spread of the umbrellas are subjected to hardships in the shade throughout their lives.

(*c*) Those who were born under the *nakats* of the third line have fewer hardships in the shade throughout their lives.

(*d*) Those who were born under the stars of the fourth line are subjected to no hardships throughout their lives.

(*e*) Those who were born under any of the *nakats* of the fifth line are subjected to moderate hardships throughout their lives.

The characteristics of people according to the constellations they were born under are described thus :—

(1) Those who were born under, *Assunda* (ဢႆသဝႃၼီ), *Lao-mahang-hawn* (လဝ်မႁႃင်ႁွၼ်) *nakat*, are mischievous and very meddlesome. They should not attempt trading on a large scale.

(2) Those who were born under *Berana* (ပေရႃၼီ), *Lao-kawn-hsao-hkam* (လဝ်ၵွၼ်သဝ်), are simple and straightforward. They are likely to be well-to-do, and may trade on a large scale.

(3) Those who were born under *Kæti* (ၵြတ်တိၵႃ), *Lao-wi* (လဝ်ဝိ) are idle, deceitful, and selfish. Unless they are forced to work, they will live by lying and deceit.

(4) Those who were born under *Rehena* (ေလႃႁိၼ်ႈ), *Laohkwang* (လဝ်ၶွင်) *nakat*, are savage, brave, and violent-tempered. They are very disobedient, disregard their parents and relations, and will not live long.

(5) Those who were born under *Muwasirisa* (မိၵႃသိ), *Lao-ho-tüng* (လဝ်ႁူဝ်တိူင်), are sickly, unsteady, and weak. They should be contented to trade on a small scale.

(6) Those who were born under *Ada* (ဢဒြႃ), *Lao-hang-hön* (လဝ်ႁၢင်ႁိူၼ်ႈ), are very talkative and silly, but there is no reason why they should not trade.

(7) Those who were born under *Punawasa* (ပုၼ်ႈၽုၼ်တု), *Lao-hö-tawng* (လဝ်ႁိူဝ်တွင်), are respectable and good-natured. They should be well-to-do, and are likely to marry a person from a distant country.

(8) Those who were born under *Pusa* (ပုၼ်ႈၽုၼ်သ), *Lao-hka-pè* (လဝ်ၶႃပေ), are gentle, good-natured, and kind-hearted. They make great traders and are very popular and much liked by relatives and friends. They will live long and may become distinguished.

(9) Those who were born under *Aslisa* (ဢသလိၼ်သ), *Lao-hung-hkao* (လဝ်ႁုင်ၶဝ်), are mischievous and inclined to robbery and dacoity. Unless they are kept at home by their parents, they are likely to come to a bad end.

(10) Those who were born under *Manekata* (မၢၶ), *Laomawn, htai* (လဝ်မွၼ်ႈတႆ), are good-tempered and easily educated. They have no gifts for trade and usually remain poor. They should avoid hunting, in which they are very apt to lose their lives.

(11) Those who were born under *Puwapul* (ပုၼ်ပၽႃၵုၼ်ႈ), *Lao-tin-hpöm-pa-na* (လဝ်တိၼ်ၽိူမ်ပႃၼႃ), are respectable, good-natured, and straightforward. They

make good leaders, live long, and accumulate fortunes.

(12) Those who were born under *Utrapal* (ဢုတ်တြႃပႃလုင်ဢီ), *Loa-tin-hpöm-pa-lang* (လဝ်တိၼ်ၽူမ်ပႃလင်), are of very luxurious and sensual habits, which threaten them with short lives.

(13) Those who were born under *Hata* (ႁတ်ထ), *Lao-tôp-hsawk* (လဝ်တုပ်သွၵ်), are obstinate and fond of contradicting. They are not likely to make money and should avoid entering Government sevice in any capacity.

(14) Those who were born under *Sita* (သီတြႃ), *Lao-môk-ngang* (လဝ်မုၵ်ငင်), are respectful, obliging, and courteous. They will do well in trade or may become Government officials holding prominent appointments as *Hēngs*, *Htamôngs*, and the like. They often marry a person from a distant country.

(15) Those who were born under *Sa* (သတ်), *Lao-kawn-hpai-lông* (လဝ်ၵွၼ်ၽႆလူင်), are inclined to travel and to leave their homes, but should curb the tendency, as it is likely to lead to death in poverty. They should avoid going afloat for they are very likely to be drowned.

(16) Those who were born under *Wisa* (ဝိသႃ), *Lao-hsôn-hpak-kyi* (လဝ်သုၼ်ၽၵ်ၵျိ), are quarrelsome and contradictory ; very hasty-tempered, but nevertheless popular, successful in trade, and longlived.

(17) Those who were born under *Anura* (ဢၼုရထႃ), *Lao-sawng-pun* (လဝ်သွင်ပုၼ်), are sickly, weak, and simple and should confine themselves to work at home. They should avoid climbing trees, as accident resulting in the loss of life is indicated.

(18) Those who were born under *Deta* (ၸေတ), *Lao-naga-hpā-kawn-pun* (လဝ်ၼၵ ၽႃးၵွၼ်ပုၼ်), are amiable, gentle, and wise. They prosper in trade and may enter Government service, where they are likely to get on well and acquire influence.

(19) Those who were born under *Mula* (မူရႃသံ), *Lao-sang-noi* (လဝ်လၢင်ၼွႆႉ), are sensual and love luxury. They should confine themselves to work at home, but in any case their lives are likely to be unhappy.

(20) Those who were born under *Puwasala* (ပုဗ်ပသံ), *Lao-sang-mawk-ya* (လဝ်လၢင်မွၵ်ယႃ), are poor and unlucky. They should not trade and they should avoid warlike pursuits. They are likely to marry some one from a distant country.

(21) Those who were born under *Utrasala* (ဢုတ်တြႃသံ), *Lao-tin-lang-sang-noi* (လဝ်တိၼ်လၢင်လၢင်ၼွႆႉ), are mischievous and troublesome. They should avoid long journeys.

(22) Those who were born under *Suwana* (သႃဝိၼ်), *Lao-hka-kyēng* (လဝ်ၶႃၵိင်) are miserable and wretched. They should lead home-keeping lives and take great care never to be summoned to appear before a judge.

(23) Those who were born under *Denata* (တႃၼိတ်တ), *Lao-hsai-kôp* (လဝ်သႆႉၵုပ်), are lustful and fond of self-indulgence, but they will be poor. Hunting is likely to be very dangerous for them.

(24) Those who were born under *Siyawasa* (သတဝ်သ), *Lao-mai-ngam* (လဝ်မႆႉငံ), are stupid and slow. They should neither trade nor travel.

(25) Those who were born under *Puwaputupa* (ပုဗ်ပပႃရုပ်), *Lao-pik-tan* (လဝ်ပိၵ်တၢၼ်), are kind-hearted, good-natured, and respectful in manner. They are likely to prosper greatly in trade, but are liable to sudden illnesses and should live near a doctor.

(26) Those who were born under *Utraputupa* (ဢုတ်တြႃပႃရုပ်), *Lao-hkao-wô* (လဝ်ၶဝ်ဝုဝ်), are nervous and unlucky. They shold avoid trade and the pursuit of game and stay at home.

(27) Those who were born under *Rewati* (ရေဝတိ), *Lao-pa-nai-hkam* (လဝ်ပႃၼႆႉၶံ), are ignorant and simple. They are particularly liable to be drowned.

The probable characteristics are as follows :—

(1) Those born under *Punawasa* (ပုဏ္ဏဖုသျှ), *Wisa* (ဝိသာခါ), and *Puwaputupa* (ပုဗ္ဗပပါရဗိုက်) are intelligent and profit by education.

(2) Those born under *Pusa* (ပုဏ္ဏဖုဿ), *Anura* (အနုရဓာ), and *Utraputupa* (ဥတ္တြာပါရဗိုက်), are born chiefs and they become rulers of men by their own qualities.

(3) Those born under *Aslisa* (အာသလိဿ) and *Detā* (ဇေဋ္ဌာ) become *Rahandas* and *Sayadaws*.

(4) Those born under *Assunda* (အာသဝါဏီ), *Mánekata* (မာခ), and *Mula* (မူရသံ), are poor and wretched.

(5) Those born under *Berana* (ဘရဏီ), *Puwapul* (ပုဗ္ဗဘာရဂုဏ္ဏီ), and *Puwasala* (ပုဗ္ဗသံ) become wealthy.

(6) Those born under *Kæti* (ကြတ္တိကာ), *Utrapal* (ဥတ္တြာဘာရဂုဏ္ဏီ), and *Utrasala* (ဥတ္တြာသံ) are likely to become thieves.

(7) Those born under *Rehena* (ရောဟဏီ), *Hata* (ဟဿတ) and *Suwana* (သာရဝံ) are honest traders.

(8) Those born under *Muwasirisa* (မိဂသီ), *Sita* (စိတ်တြာ), and *Denata* (ဓနသိဋ္ဌ) are lustful and quarrelsome.

(9) Those born under *Ada* (အဒြာ), *Sá* (သာတိ), *Siyawasa* (သတဘိဿ), and *Rewati* (ရေဝတီ) are best suited for Government service.

The centre of vigour in the human body is believed to shift downwards during the week—

On Sunday it is in the head.
On Monday it is in the forehead.
On Tuesday it is in the shoulders.
On Wednesday it is in the mouth, chin, and cheeks.
On Thursday it is in the waist and hands.
On Friday it is in the breast and legs.
On Saturday it is in the abdomen and the toes.

Bleeding from any of these parts on their particular day is considered very dangerous and sinister.

The following are hints for wedding days:—

The first waxing day of the month is an unlucky day. The couple will hate each other shortly after marriage.

The second waxing is an unlucky day. The couple will not live long.

The third waxing is unlucky. The couple will have disagreements.

The fourth waxing is unlucky. The wife will flirt.

The fifth waxing is unlucky. The couple will have many misfortunes.

The sixth waxing is unlucky. The couple will quarrel.

The seventh waxing is lucky. Love will be permanent.

The eight waxing is lucky. Happiness is before them.

The ninth waxing is unlucky. The wife will not love her husband.

The tenth waxing is unlucky. The couple will hate each other after the marriage.

The eleventh waxing is unlucky. The couple will come to blows.

The twelfth waxing is lucky. The couple will be affectionate.

The thirteenth and fourteenth waxing also promise happiness and prosperity.

The full moon is an unlucky day. The husband will not love his wife.

The first and second waning of the month are lucky. The couple will love each other and live happily.

The third waning is unlucky. The couple will have many sorrows.

The fourth waning is lucky.

The fifth waning is unlucky. The wife will die before the husband.

The sixth waning is unlucky. The husband will die before the wife.

The seventh waning is unlucky. The wife will die before the husband.

The eighth and ninth waning are lucky. The couple will be happy and constant.

The tenth waning is unlucky. The wife will die before the husband.

The eleventh waning is unlucky. Both husband and wife will die early.

The twelfth waning is lucky. The couple will love each other unwaveringly throughout their lives.

The thirteenth waning is lucky. The couple will enjoy a happy

life, but will have no children.

The fourteenth waning is unlucky. The couple will live unhappily throughout their lives.

The fifteenth waning is unlucky. The couple will not live long after the marriage.

The constellations have also an influence over the entire year—

(1) If the Hsangkyan or new year commences from a year that ends with the word *saü* (ၸဵု), the *Wisa nakat* day, the new year will be presided over by the birds, the moon by the Yôkaso (ယုၵ်သၵုဝ်) *nat*, the earth by the beggars, and heaven by the Nang-hpi-yahsa (ၼၢင်ၽီယၢသၢ) *nat*. During such a year men should submit to women, trees to *mai-pao* (မႆပဝ်) trees, quadrupeds to rabbits, and birds to vultures. Crops on high land will fail and those on low land will flourish. Sickness will prevail among the people. Masters and servants will wrangle continually. Children born in such years will become eminent. East and west will be unlucky directions for all. Those who are born on Wednesday will be unfortunate.

(2) If the Hsangkyan commences from a year that ends with the word *pao* (ပဝ်), the *Deta nakat* day, the new year will be presided over by the *nagas* (ၼၵၢး), the moon by the tiger, the earth by the Yekka-kung-hpan Hpilu (ယၵ်ၶၢၵုင်ၽၢၼ်ၽီလူ), and the heavens by the Nang-hpi Praya (ၼၢင်ၽီပြၢးယၢ) *nat*. During the year men should reverence Nangmala (ၼၢင်မၢလၢ), a lady whose history is not given); among quadrupeds lions are chief, among birds parrots, among trees the *maiti* (မႆတိ) trees. Crops on both high and low lands will fail; there will be scarcity throughout the year, while cattle will suffer considerably from disease. Children born in the year will be good scholars. North and east will be unlucky directions for all. Those born on Thursday and Saturday will be exposed to danger.

(3) If the Hsangkyan commences from a year that ends with the word *yi* (ယီ), the *Assunda nakat* day, the new year will be guarded by ponies, the moon by dogs, the earth by the Hpilu-yēkka (ၽီလူယၵ်ၶၢ), and the heavens by the Hpi-engta-hsura (ၽီဢိင်တၢသူရၢ) *nat*. The ignorant should yield to the educated, quadrupeds to *ôk-hsapa* (ဢုၵ်ၶသၽ) oxen, birds to golden *hin-hsa* (ႁင်သၢ)

birds, and trees to *mai-mak-man* (ယ့်မၵ်မၢၼ်) trees. Crops on high and low land will fail and there will be famines. Children born in the year will be lucky. North and north-east are unlucky directions for all. Those born on Thursday and Friday will be exposed to dangers.

(4) If the Hsangkyan commences from a year that ends with the word *mao* (မဝ်), the *Suwana nakat* day, the new year will be guarded by pigs, the moon by rabbits, the earth by the Hpilu-wala (ၽိလူဝါလႃ), and heaven by the Sakyas (သၵျႃး). During the year men should reverence Brahmans, quadrupeds golden alligators, birds black crows, and trees *mai-mung-hkam* (ယ့်မုင်ၶမ်) trees. Crops on high and low lands will flourish. The year will be a happy one, but children born in such years will be ill-conducted and quarrelsome. East and south will be unlucky directions for all. Those born on Saturday will be in danger throughout the year.

(5) If the Hsangkyan commences from a year that ends with the word *hsi* (သိ), the *Pusa nakat* day, the new year will be guarded by the vultures, the moon by the Hpilu-anga-saraw (ၽိလူဢင်ၵႃသရေႃ), and the heavens by the Hpi-yēk-ka-kung-hpan (ၽိယိၵ်ၵုင်ၽၼ်) *nat*. During the year the poor should submit to those in authority, quadrupeds to pigs, birds to peacocks, and trees to *mai-hsang-hkam* (ယ့်သင်ၶမ်) trees. Crops on high and low lands will flourish. Such years are fortunate, and children born will turn out well. South-east and south-west will be unlucky directions for all. Those born on Sunday incur especial risks.

(6) If the Hsangkyan commences from a year that ends with the word *hsai* (သ့်), the *Aslisa nakat* day, the new year will be guarded by ponies, the moon by golden deer, the earth by the Hpilu (ၽိလူ), and the heavens by the Nang-sandi-ma (ၼင်သၼ်တိမႃ) *nat*. During the year the ignorant should yield to the educated, quadrupeds to elephants, and birds to golden parrots. Crops on high and low land will flourish; such years are lucky, but the children born in them are obstinate, though they are likely to prosper. South and west will be unlucky directions for all. Those born on Monday will be most exposed to danger.

(7) If the Hsangkyan commences from a year that ends with the word *hsi-nga* (သိငႃ), the *Kæti nakat* day, the new year will be guarded by buffaloes, the moon by ponies, the earth by the

Hpilu (ၽီလူ), and the heavens by the Kun-hpi-hsi-lita (ၵုၼ်ၽီသီလိ တႃ) *nat*. During the year the poor should yield to those in authority, quadrupeds to wild bulls, birds to *pisio* (ပိသိဝ်) birds, and trees to *mai-lang-hkö* (မႆႇလင်ၶိုဝ်) trees. Cattle will suffer from disease and many rich people will be ruined. Frontier tribes will rise against the local authorities. Dacoities and robberies will be frequent. Great scarcity will prevail. Children born in the year will become rich. South-west and due west will be unlucky directions for all. Those born on Tuesday will be in especial danger.

(8) If the Hsangkyan commences from a year that ends with the word *môt* (မွတ်), the *Muwasirisa nakat* day, the new year will be guarded by the Ók-hsa-hpa (ဢွၵ်သႃၽႃ) oxen, the moon by the Nang-hpi(ၼၢင်ၽီ) *nat*, the earth by the Hpilu (ၽီလူ), and the heavens by the Nang-hpi-hsita (ၼၢင်ၽီသီတႃ). During the year men should submit to Brahmans, quadrupeds to pigs, birds to ducks, and trees to *mawk-mule* (မွၵ်မူလေႃ) trees. Crops on high and low lands will flourish. Frontier places will rise against the local authorities. Children born in the year will be pack-bullock traders. Due west and north-west will be very unlucky directions for all. Those born on Wednesday will be exposed to danger.

(9) If the Hsangkyan commences from a year that ends with the word *hsan* (သၼ်), the *Punawasa nakat* day, the new year will be guarded by parrots, the moon by the alligator, the earth by the Hpilu (ၽီလူ), and the heavens by the Kun-hpi-asa-waraw (ၵုၼ်ၽီ ဢသဝႃရေႃ) *nat*. During the year the poor should yield to authorities, quadrupeds to ponies, birds to fowls, and trees to *mai-nam-nö* (မႆႇၼမ်ၼိုဝ်) trees. There will be scarcity; dacoities and robberies with murder will be frequent. Children born in the year will be sickly in youth, but will grow up strong. North and north-west will be unlucky directions for all. Those born on Tuesday will be in danger.

(10) If the Hsangkyan commences from a year that ends with the word *hao* (ႁဝ်), the *Mánekata nakat* day, the new year will be guarded by hogs, the moon by peacocks, the earth by beggars, and the heavens by the *hpi-ratana* (ၽီရတၼႃ). During the year the poor should yield to the powerful, quadrupeds to pigs, birds to

nôk-yio (ၼူၵ်ယိဝ်) birds, and trees to *mai-hung* (မႆႁုင်) trees. Crops on high and low lands will fail. Great famine and scarcity will prevail throughout the year. Children born will acquire fame and live in great cities. North and east will be unlucky directions for all. Those born on Friday will be in danger.

(11) If the Hsangkyan commences from a year that ends with the word *mēt* (မိတ်), the *Puwapul nakat* day, the new year will be guarded by the *mi-ung-lang* (မိဢုင်လင်) birds, the moon by golden ducks, the earth by the Pretas (ပိၵ်တႃ), and heaven by the Hpi-arawaka (ၽီဢႃရဝၵႃ) *nat*. During the year men should submit to the Nang-tawm-santa (ၼၢင်တွမ်သၼ်တႃ) *nat*, quadrupeds to oxen, birds to eagles, and trees to *mawk-ya-wan-wai* (မွၵ်ယႃ ဝၼ်ဝႆ) trees. Crops on high and low lands will flourish. Children born in the year will be wicked, obstinate, and selfish. North-east and due east will be unlucky directions for all. Those born on Saturday will be unlucky.

(12) If the Hsangkyan commences from a year that ends with the word *kaü* (ၵဝ်), the *Sitanakat* day, the new year will be guarded by golden swans, the moon by oxen, the earth by the Kum-hpi Yôkaso (ၶုၼ်ၽီယူၵ်ၵသူဝ်) *nat*, and the heavens by the Hpi-hsita (ၽီသီတႃ) *nat*. During the year the people should submit to Brahmins, quadrupeds to rabbits, birds to paddy-birds, and trees to plantain trees. Crops on high and low lands will flourish and the year will be happy. Children born will become famous. This year is a lucky year for every one.

The following are the appropriate totems :—

(1) If the Hsangkyan falls on a Sunday, the Hkun Hsangkyan (ၶုၼ်သင်ၵျၢၼ်) rides on a *naga*, holding a celestial weapon in the left hand, a two-edged sword in the right hand, and he travels from north-east to south west. Constant war goes on in such year.

(2) If the Hsangkyan falls on a Monday, the Hkun Hsangkyan (ၶုၼ်သင်ၵျၢၼ်) rides a *ngu-pai* (ငူပႆ) snake (sea dragon), holding a *setkya* (သိၵ်ၵျႃ) spear in the left hand, the neck of an elephant in the right hand, and he travels from north-west to due south. Snakes are numerous during the year.

(3) If the Hsangkyan falls on a Tuesday, the Hkun Hsangkyan (ၶုၼ်သင်ၵျၢၼ်) rides a *kalôn* (ၵႃလုၼ်), holding a spear in the left hand, a sword in the right hand, and he travels from north to south-east. Birds will suffer considerably from disease during the year.

(4) If the Hsangkyan falls on a Wednesday, the Hkun Hsangkyan (ၶုၼ်သင်ၵျၢၼ်) rides a buffalo, holding fire in both hands, and travels from east to west. Cattle will suffer considerably from disease during the year.

(5) If the Hsangkyan falls on a Thursday, the Hkun Hsangkyan (ၶုၼ်သင်ၵျၢၼ်) rides a white pony, holding water-pots in both hands, and he travels from west to north-east. People will suffer considerably from sickness during the year.

(6) If the Hsangkyan falls on a Friday, the Hkun Hsangkyan (ၶုၼ်သင်ၵျၢၼ်) rides the *Ôk-hsa-hpa* (ဢုၵ် သၽ) ox, holding sacred flowers in both hands, and he travels from south-east to north-west. A lucky year for all.

(7) If the Hsangkyan falls on Saturday, the Hkun Hsangkyan (ၶုၼ်သင်ၵျၢၼ်) rides a *Hpilu-hpai* (ၽိလူၽႆ), holding a burning brand in the left hand, a walking staff in the right hand, and he travels from north-east to south-west. Fires will be frequent during the year.

The above is translated from the magic book of a Shan from Möng Möng beyond the British border. He lives in the Shan village near Government House, Rangoon, and makes much money by casting nativities, determining lucky days, exorcising evil spirits, and drawing up love-spells. This main table is exactly the same as that used by the Taoist fortune-tellers in China, and the calculations take so much trouble that he is firmly convinced of the certainty of the events he foretells. Yet he is a pious Buddhist and his customers include many prominent churchwardens.

The Buddhist monks have begun to make use of the printing press and of late years broad sheets have been issued at the beginning of the Burmese year, which may be considered as a sort of local Old Moore's Almanac. There are signs in that issued for

the Burmese year 1260 (1898-99) that the Shan *Hpè-wan* has been drawn upon for prophecies of the Mandalay *Mahā Thingyan*. It runs as follows:—

On Tuesday morning, the 12th April 1898, at nine hours, fifty minutes, and twenty-four seconds, corresponding to the morning of the seventh waning *Hnaung Tagu* 1259 B. E., at one gong (တချက်တီး), one *pad* (တပါဒ်), eight *bizanas* (ရှစ်ဗီဇနာ), five *prans* (ငါး ပြ), and one *kara* (တခရာ), the *Banuyaza Taninganwe Gyomin* (ဘာနုရာဇာတနင်္ဂနွေဂြိုဟ်မင်း), the Sunday planet, surrounded by a thousand rays, radiating to a distance of fifty *yuzanas* and over a circumference of one hundred and fifty *yuzanas*, glowing in the colour of the *Abrus precatorius*, and mounted on a *galôn* with a two-edged sword in one hand and a broom in the other, leaves the abode of the *Rewati Nekkat* (*Pisces*, the twelfth sign of the Zodiac) from the north and enters the abode of the *Asawanina Nekkat* (*Aries*, the first sign of the Zodiac) on the south-east. At the appointed time the turn of the *Danthi Dewi Nat-thami* (ဓံသီဒေဝီနတ်သမီး) ends and she hands over the fabulous head of *Byanma Min* to the charge of the *Gawratha Dewi Nat-thami* (ဃောရသာဒေဝီနတ်သမီး) for the year. The *Mahawraka Dewi Nat-thami* (မဟောဒရကာဒေဝီနတ်သမီး) waits on the *Thingyan* as he passes to his place and she is clad in five different colours. Therefore—

During the year 1260 B.E. the rains will fail at the beginning but will be abundant in the middle and at the close of the season. Locusts, bees, and birds will greatly increase in numbers. Both rich and poor will enjoy peace and prosperity. Travellers and traders will be free from danger, crops of all kinds will come to a bountiful harvest. *Rahans* and *pônnas*, monks and priests, will suffer great calamities.

Of the three *Thingyans* this is the *Thamanta Thingyan* and therefore the sons and daughters of all days of the week, except Tuesday and Wednesday, must repair, one hour after the *Thingyan* has descended, to the posts proper to their birthdays, and there, facing to the east, must repeat the customary doxologies to the Lord, the Law, and the Assembly, and those applicable to parents, teachers, and the aged. When these are repeated they must wash their heads at the foot of these trees.

The following day those born on Tuesday must go to the trees belonging to their birthday and go through the same ceremony, facing to the south-east.

On the third day those born on Wednesday proceed to the trees named after their day and, facing to the south, repeat the ritual and wash their heads.

When the washing of the head has been completed, each according to the birthday must put flowers in the hair :—

Sunday's children the *Gangaw* (ကံ့ကော်).
Monday's children the *Neza* (နေဇာ).
Tuesday's children the *Muya* (မုယား).
Wednesday's children the *Thabye* (သပြေ).
Thursday's children the *Thi* (သီး).
Friday's children the *Dan* (ဒန်း).
Saturday's children the *Onnyun* (အုန်းညွန့်).

The washing of the hair implies the washing away of sin and the advancement of merit.

The following acts should be avoided during the *Thingyan* days :—

Sexual intercourse, fishing, the slaughtering of animals, the felling of trees, fighting, weeping, blood-letting, drinking, gormandizing, trading, and the despatch of news of victory.

The *Ata Sekkusa* (အတာစက္ကူစား) says that on Thursday afternoon, the 14th April 1898, at one hour, fifty-one minutes, and thirty-six seconds, corresponding to the afternoon of the 9th waning *Hnaung Tagu*, 1259 B. E., at two gongs, four *nayi*, two *pads*, and nine *bisanas*, the *Thingyan* year ends with 365 days and the year 1260 B. E. begins.

Those who were born on Thursday should dress in rich garments perfumed with scents and go to the foot of the *nan* posts assigned to that day and there, facing south-west, stick *thiban* flowers in their hair. They should then present acceptable food to the *pôngyis*, to their parents, and their teachers as a token of respect and dutiful homage. This will assist in the removing of all evil from them and in the acquisition of much merit and good fortune.

The old year ends and the new year begins from the month of *Tagu*. The year shall be called the *Pusha* (ပုဿ) year. [This seems to be the Pük Saü (ပိုၵ်သႂ်), of the Hpè-wan.] During the year the dog presides (ခွေး) in general; the crocodile presides over the moon; the rat over the days of the week; the *Dekkayek* (ဒက္ခရက်) ogre guards the earth; the *Kala nat-tha* (ကာလနတ်သား) the sky; the fowl the water; the parrot the rain; and the lion watches the wilds.

The superior (အဓိပတိသား) of man is the supreme Government; the superior of quadrupeds is the dog; the superior of birds is the common fowl; the superior of trees is the *thaminsa* (သမင်စာ) tree; the superior of bamboos is the *wa-thè* (ဝါးသဲ), and the superior of grasses is the *thaman* (သမန်း) grass.

Twelve stars (နက္ခတ်) disappear and thirteen come in their place. The soil is everywhere life-giving for crops; though rain fails at the beginning and in the middle of the wet season, yet at the close it abounds in hundreds of showers. Thus the lowlands are flooded deep and fertilized when the highland fails. Crops of all kinds will yield a bounteous harvest. Fish and big game will perish. There will be many unlawful acts committed among the people. There will be a scarcity of rice in the months of *Kasôn*, *Waso*, *Nadaw*, and *Tabaung* (May, July, December, and March). There will be much thunder, threatening rain, in the month of *Kasôn*, and the rain will come the following month. The first and second crops of paddy promise to be heavy, but fruits and nuts will fail. The children born during the year will escape sickness and are likely to be rich, educated, and happy. They should live to three score years.

The *Byagaya Thiyin Yathe* (ဗျာကရာသိဂျင်ရသေ့) and the *Thireindra Nat-tha* (သိရိန္ဒြနတ်သား) have compassion on created beings during the rains and send the following quantity of rain to the earth: one measure (တတင်း) of rain to mankind; four measures to the *Himawunta* (ဟိမဝန္တာ) forest; and none to the *Thaddarabban* (သဒ္ဒရဗ္ဗာန်), the seven ranges of hills that encircle Mount Myimmo. Owing to the abundance of rain in the *Himawunta* forests, heavy mists, fogs, snow, and frost will be prevalent during the year. Fodder will be abundant. Such things as are named with letters assigned to Wednesday decrease in value, while those which begin with Sunday's letters increase and flourish. The *Teinbin* (ထိန်ပင်), *Mauclea cordifolia*, a species of coffee-wort, governs all the trees, and the *Pôppa-kyè* (ပုဗ္ဗကြယ်), the star of men, rests among the reeds.

Counting from the year when the Buddha was born under the *ingyin*, the *sâl* tree, the *Thathana* year, the year of religion, is 2442. There remain 2,558 years yet to come. All those who would do well should visit pagodas and monasteries, listen to discourses on the law, give alms, feed the monks, seek to do good works, observe the laws, the precepts, and commandments, and strive diligently after the good.

Many of the prophetic details have all the appearance of being taken direct from the *Hpè-wan*. The document was sold as a broadsheet in Rangoon for two annas.

Such astrological beliefs naturally lead to necromancy. Efforts are made by means of talismans, tattooed charms, cryptic phrases, and the like to avoid the dangers threatened by birth on an unlucky day, or to ensure fortune under dangerous circumstances. Many of the phrases and signs used seem to have no meaning, or

at any rate no more meaning that can be discovered than the *Konx Ompax* of the Eleusinian mysteries, or are a mixture of sense and nonsense like the "All hail" charm of the Cossacks—

Zdravstvuitya zhivuchi v sioni.

* * * *

Chelovyeko vyeko liubche.

Mr. Taw Sein Ko, the Government Translator, has furnished the following paper on Burmese necromancy:—

"Necromancy was one of the occult sciences of mediæval Europe and the basis of it was animism. The cult still prevails in Burma and, according to the belief of its votaries, the world is peopled not only by living human beings but also by their spirits or souls in a disembodied state, endowed with passions and material appetites. The object of a Burmese necromancer is to acquire influence over these spirits and make them do his bidding. Spirits are of two kinds—(1) of a higher order or *nats*, (2) of a lower order or *tasè*. Witches and wizards are supposed to be materialized spirits or beings who can project their astral bodies in space and regulate their movements.

"Incantations play an important part in Burmese necromancy. They are composed in Sanskrit, Pāli, Burmese, Talaing, and Shan, and sometimes in an unintelligible jargon consisting of a mixture of two or more of these languages. The mystic Sanskrit symbol *Ôm* is invariably placed at the beginning of each incantation. The selection below will give a fair idea of the absurdity of their meaning in the majority of cases, and of the slight connection between their sense and the purpose for which they are employed.

"The following directions are given to procure immunity from gun-shot wounds. Utter *Ôm* while holding a leaf on a tree, say *ti* and pluck it off, and say *shè* and put it into the ear. The *gâthâ Ôm ti shè* is untranslateable.

"In order to escape from enemies, famine, plague or epidemic, repeat continually the following *gâthâ*, get it inscribed on a palm leaf and suspend it in the doorway of your house: ! Ôm ! Suvannabhumi gantvâna mahiddhikâ, pisâce niddhamitvâna Brahmajâlam adesayum="Ôm! Having gone to Suvannabhumi (Thatôn) and vanquished the powerful ogres, they preached the Brahmajalasutta." This relates to the advent of the Buddhist missionaries Sona and Uttara at Thatôn after the Third Council in the third century B. C.

There is a simple remedy for hydrophobia. Take forty-nine slices of *padaing-myit* (*dhatura* root) and forty-nine seeds of black pepper and pound them into a paste. Face towards the south at sunset and mutter the following three *gâthâs* forty-nine times over the mixture, and then administer it to the patient:—

(1) Ôm! Buddha, Buddha, bhinna, bhinna, sunakkha, thwâhà. Ôm! Buddha, Buddha, broken, broken, dog, go!

(2) Ôm dokpôn kyè law, tetkyè law, sunakkha thwâ ha. Ôm! Is the heap of sticks wide? Is the upper portion wide? Dog, go!

(3) Ôm pauksein tu law, kweyu law, sunakkha, thwâ ha. Ôm! Is digging done with an axe. Is the dog mad? Dog, go!

WITCHCRAFT AND ITS REMEDY.

Witchcraft.

Witches and wizards are beings who can harm others by an occult influence, and can at will send out their spirits to possess their victims. Sometimes bewitched persons are cremated and pieces of hide or beef are found unconsumed by fire. When a person is suspected of having been bewitched, some food is placed in a bamboo platter and placed outside the house at nightfall. Dogs always come and eat it. If any grass is found in the platter in the morning, the interpretation is that the victim has incurred the displeasure of some witch or wizard; but, if stones are found, the omen indicates that he will soon recover, and, if any earth is found, he will certainly die.

Witchcraft was recognized by Burmese law under the native régime. If a person was accused of having compassed the death of another by means of witchcraft, and if he confessed, the sentence of banishment was pronounced upon him. If the charge was denied, the accused person was treated in the following manner (those practising witchcraft were generally women):—The suspected woman was dressed in white and her hair was done up in seven knots, through each of which a vulture's quill was stuck. She was bound by her hands and feet, and a rope with seven knots was attached to her waist. Two boats were lashed alongside each other and matting made of *tashu-wa* (bamboos used in stirring the fire at a cremation) was laid on the sides of the boats, and the accused was made to sit on the matting. A palm-leaf scroll containing the following inscription was then tied round her neck. "I——have been charged with having bewitched——'s child. If the "charge is true, may I float in the water! If it is false, may I sink!" The boats were then moved into deep water, and arrows made of *tashu-wa* were discharged in ten directions—the four cardinal points, the four intermediate points, skywards, and downwards—into the water from a bow made of the same material. Then after a mixture of the filth from seven houses had been poured on the head of the accused, one of the attendants took hold of the rope tied round her waist, and the two boats were separated, so that the woman was plunged in the water. If she was a witch, she would float; if not, she would sink. If the accusation was thus proved false, the complainants had to give Rs. 300 as compensation to the accused.

Witches were supposed to have charmed empty gourds or bladders in their stomachs; hence they would float if immersed in water.

Remedy for witchcraft.

Bewitched persons are restored to health by *hmaw-sayas*. These doctors attain their qualification by drinking water in which ashes of scrolls containing cabalistic squares and mystic figures have been mixed, by taking special internal medicine, or by having their bodies tattooed with figures of *nats*, squares, or incantations. The afflicted person is brought before a *hmaw-saya* and he commands the offending *nat*, witch, or spirit to enter and reveal its wishes through the medium of its victim. Sometimes a mere threat is sufficient to scare away the *nat*, witch, or spirit. Generally drastic measures have to be resorted to in order to exorcise it. Pungent substances are rubbed into the eyes of the patient, who is also beaten severely. Occasionally *hmaw-sayas* are not well qualified and they are worsted, and some of

them even get killed. The ill-treatment meted out to the sick person is borne by the spirit, and the former, when cured, does not feel any after-effects of the rough usage.

At Prome, a few years ago, *nat* U Min Gyaw became enamoured of a respectable Burmese young lady. His spirit possessed her person and he declared his erotic intentions. The guardian of the girl did not approve of the proposed union, for the status or profession of a *nat-kadaw*, a *nat's* wife or medium, is not considered respectable, and he married her to a young Burman. The *nat* became enraged and the newly married husband sickened and died, and the guardian was obliged to celebrate the marriage between the widow and the *nat*. The lady thus became a *nat-kadaw* and her oracular utterances were highly esteemed. Whenever she was possessed she would drain off jars of toddy and four or five bottles of gin or brandy and would be quite sober when she regained consciousness. She would even smoke *ganja* in her cigars. After the expiry of about six months the *nat* apparently got tired of his lady-love and left her for "pastures new." She then lost the power of seeing into the past and future and, to hide her shame, she betook herself to Ma-ubin, where she died of cholera, perhaps with the approval or connivance of her celestial husband.

Pyinsalet or magic.

The great object of this art is to cause hallucination in respect of the five kinds of sensations, and to confer temporary invulnerability. This is achieved by certain potent mixtures. The following is said to be a good recipe. Take equal parts of the livers of a human being, monkey, black dog, goat, cobra, and owl, and a whole lizard, and pound them together at midnight, the pounding to cease at dawn. The paste should be kept in a gold or silver box and is to be used as follows:—Rub a little on the left eye, and witches, *nats*, and ghosts can be seen. Rub a little on the right eye, and night will be turned into day. Rub a little on the chin, and a human being will be seen like a monkey. Rub a little on the forehead and sit down, and you will be invisible. Rub a little on the legs and you will be swift of foot. Rub a little on the forefinger and point it at your enemy, and he will die. Rub a little on the hand and beat an iron safe and it will open. Rub a little on a tamarind leaf and it will be turned into a beetle. Rub a little on any inanimate moveable object, and it will be endowed with life and follow you. Rub a little on gold, and it will be turned into lead. Mix it with the blood of your sweetheart, and she will follow you. Rub a bamboo with it and bury it on a road, and those who cross over it will be deprived of their clothes. A dead cock, when rubbed with it, will become re-animated and crow. If it is rubbed on a mat, the mat will stick to the sitter. Rub a little on a sword and cut yourself with it, and no wounds will be inflicted. Rub a little on a leaf blown about by the wind, and it will be turned into a tiger or elephant at will. Rub a little on a lotus flower and it will be turned into a woman. Rub a little on a lotus bud and it will be turned into a man.

Pônnaka, or doing harm through an invisible agency.

Pônnaka is the name of a *nat* in the Vidūrajâtaka, who took the wise minister Vidura to the Queen of the *Nagās*. The Queen had heard of the wisdom and virtue of Vidura and was eager to hear him preach, and Pônnaka was commissioned by her daughter to fetch him. He did so most effectually by tying him to the tail of his horse.

The Pônnaka *nat* is capable of doing three things in an invisible manner—

(1) Throwing stones at a house.
(2) Beating people with a stick.
(3) Burning a house or village.

It is necessary at first to invoke the *nat* and this is done in the following way:—Make a wax image of an ogre on horseback (*see* Fig. 1). The

FIG 1.



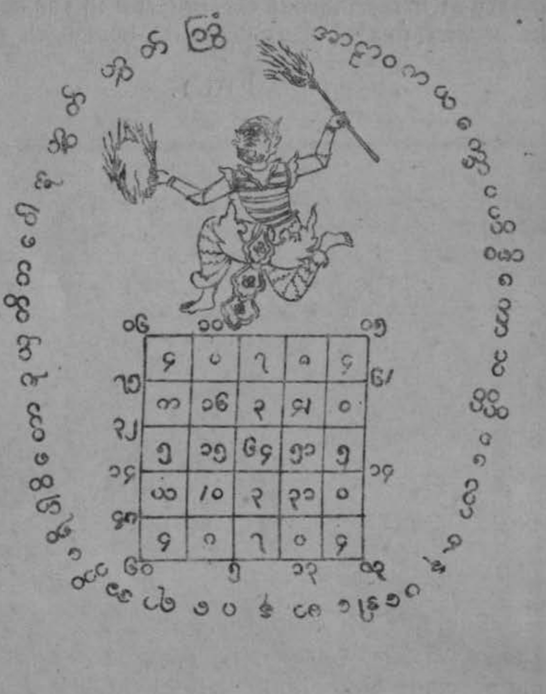
saddle should be made of the *paso* (loin-cloth) of a dead man, the bridle should be made of strings used in tying the thumbs and big toes of a dead man, and the tail should be made of the hair of a person who has hanged himself. Take the image to a big tree noted for the powers of its presiding *nat* and, after propitiating him with suitable offerings, offer up this prayer: "O lord *nat*! Vouchsafe to receive my Pônnaka, and let him do my bidding." After this, bury the image under the tree. If a heap of stones is piled up near the tree, and if Pônnaka is instructed to throw them at any house, a battery of stones will be directed against that house. If Pônnaka's image is made of a special kind of wood (Fig. 2), and if he is directed to assault any given person or persons, the required effect will be produced. The

FIG 2.



most disastrous consequences are reserved for the Pônnaka with a fire-brand. His image and a legend round it (Fig. 3) may be inscribed on a

FIG 3.



potsherd and, by intoning the legend, houses or villages can be burnt down by an invisible agency. The following is a translation of the incantation: "O fierce, strong, and powerful Pônnaka *nat!* I pray thee go quickly and burn down such and such a house, hamlet, village, or town."

CHARMS OF INVULNERABILITY.

Bawdithâda.

The great proto-type of acquired invulnerability was an Indian King of mythic times, called Porisâda or man-eater, now corrupted by the Burmese into Bawdithâda. This king was extremely fond of beef, and one day, the supply running short, his cook served up human flesh instead. He found the taste so excellent that he gave stringent orders that nothing but human flesh should be prepared for his table in future. The direct result of this command was that the country became perceptibly depopulated, and there was some popular effervescence.

Vox populi was *vox dei* even in those days, and the king had to pronounce upon himself the sentence of banishment. He was now free from

any restraint imposed by law or public opinion, and his consumption of human flesh was excessive. Eventually, while hiding in a pond filled with lotus plants, he was captured by an embryo Buddha, and, through him, was reconverted into a sociable being in love and peace with his fellow-creatures.

There are thus three representations of Bawdithâda—

Fig. 1.—Leaving his capital with a two-edged sword on his shoulder

FIG 1.



and holding a human head.

FIG 2.



Fig. 2.—Crowned with a lotus leaf while hiding himself in the pond.

Fig. 3.—Returning to the capital after his reconversion. This figure is obtained by reversing the facing of Fig. 1 and leaving out the decapitated head.

All or any of these figures may be tattooed in red above the waist. The vermilion dye must be mixed with human fat and with a potent mixture called *thathana ngadaung se*, or the "mixture whose efficacy will last during the five thousand years allotted for the continuance of Buddhism," and it is absolutely imperative that the candidate shall hold a piece of human flesh between his teeth while he is being tattooed.

One who is properly tattooed with the figures of Bawdithâda is proof against wounds inflicted by sword, gun, or cudgel. He will beat the record in high and long jumps, and his courage will be undaunted. He will be endowed with these qualities as soon as he has finished muttering the legends inscribed round the figures. But, if he feels inclined to jump and skip about without the help of these incantations, he has gone mad. The strain on the mind of being tattooed in the manner above mentioned is so great that most aspirants, fortunately for the public peace, become incurably mad.

The following is a translation of the incantations muttered by a fully qualified Bawdithâda:—

(*Figs. 1 and 3*).—"I, Bawdithâda, who am qualifying to be the great robber chief Angulimâlâ, am now going fast ahead."

(*Fig. 2*).—"May I, Bawdithâda, speedily succeed in capturing him" (the embryo Buddha, King Sutasoma, who reconverted him).

OTHER CHARMS OF INVULNERABILITY.

The whole bent of mind of the credulous section of the Burmese people appears to be directed towards discovering and inventing means for protecting themselves against physical violence. This effect can be secured by—

(*a*) internal medicine;
(*b*) bathing in medicated water;
(*c*) carrying about on one's person metallic balls, &c.
(*d*) tattooing on the person figures or cabalistic squares.

(*a*) *Internal medicine.*

Take for fifteen days or a month a mixture of black pepper, zingiber, and honey, over which certain incantations have been muttered, and the flesh will become hardened and be proof against sword-cuts. There is a subsidiary effect in that the person becomes impotent.

(*b*) *Bathing in medicated water.*

There is a plant growing in the Shan hills which has peculiar properties. Boil it in water and bathe in the decoction while it is boiling hot. The effect produced is very chilling—just like bathing in ice-cold water. Some persons, after such a bath, have to be literally roasted to restore warmth. If a man can go through such an ordeal, his flesh becomes very hard and he is proof against all wounds inflicted by sword or spear.

(*c*) *Carrying about on one's person metallic balls, &c.*

Balls of mercury, iron, or orpiment, as well as amulets, talismans, and the like, may either be buried in the flesh or carried about on one's person.

In time of war, the favourite device is to inscribe Fig. 1 on one's turban. This ensures against all war risks. In this charm the placid and peaceful Buddha is incongruously placed as the central figure; an army of *nats* followed by contingents of lions and dragons is led by a celestial ogre; the dwellers in the sky are headed by the sun and moon; and lastly, as if to cast oil on troubled waters, a band of monks is requisitioned.

(*d*) *Tattooing on the person figures and cabalistic squares.*

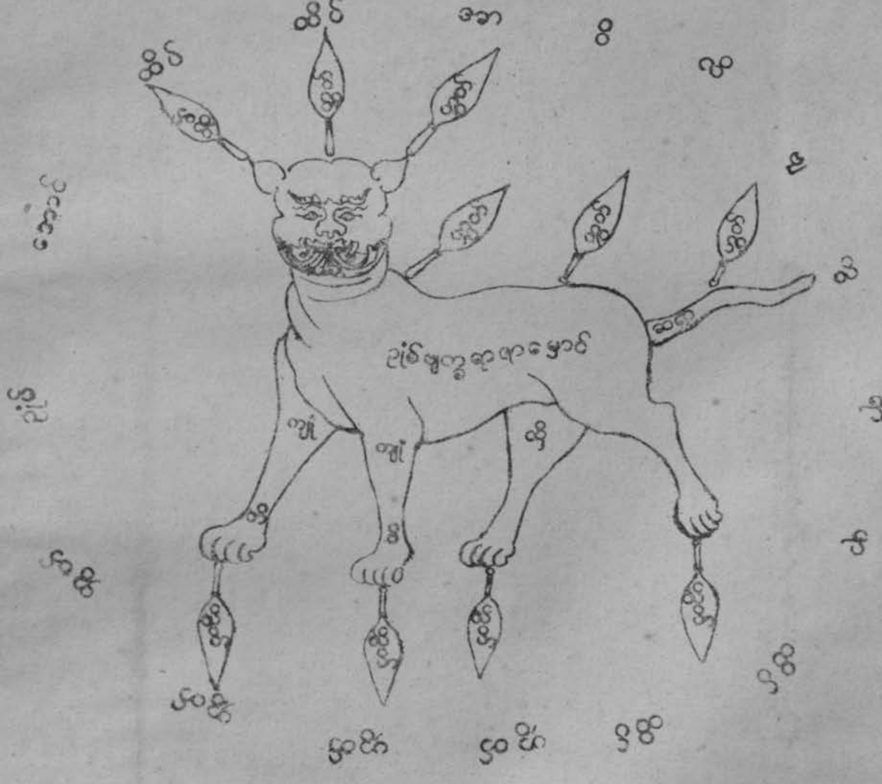
Thieves and robbers have a particular predilection for Fig. 2, representing the king of tigers. When a person's legs are tattooed with this figure he becomes swift of foot and light of body.

The cabalistic square (Fig. 3) when tattooed on the right side of one's back, renders him invulnerable against gun-shots. The meaning of the Pali legend inscribed within is as follows:—

"The attributes of the three gems (Buddha, law, and assembly) transcend all others. By virtue of the truth of such utterance may peace and happiness cling to me for ever."

There are Burmese treatises dealing with alchemy and love-philtres, but they scarcely come within the domain of necromancy proper, and for all practical purposes may be left out of consideration.

FIG 2.



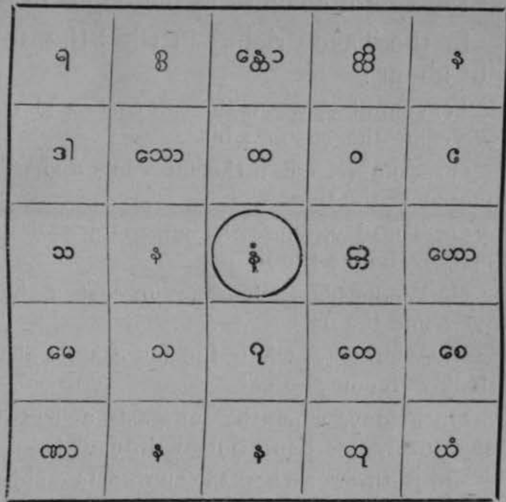






Repeated failures have no effect in destroying the belief in these charms, and the leaders of the gangs which disturbed the Upper Province in the years which followed the annexation made the fullest use of the faith which their followers had in incantations, runes cabala, and amulets to keep their bands together. It(is a singular proof of lthe way in which animistic worship overlies the Buddhism of Burma that many of the most noted seers, necromancers, and tattooers are *pôngyis*. Many of the most stubborn dacoit leaders were monks, and those who were not, usuallyhad warlock monks in their train.

FIG. 3.



A *pôngyi* who followed Bo Swe to the last made special use of the two following incantations, which Mr. Taw Sein Ko characterizes as a rigmarole of Talaing, Burmese, and Pali :—

(1) Ôm ! Nadaung, nabin, tamin, thudewaw, thudewaw, thamudra nāgaw pyaikein pôkpaung, pôkpaung, salaung, salaung, min â salaung. Â salaung aing ti pwè, ma ti pwè, aing nadaung nabinta.

This is quite untranslateable. The instructions are that the formula is to be repeated thirty-seven times over a glass of water, which is then drunk. This guards against danger in war.

(2) Aung! Thaman, thaman mundra ya thwa ha.

This also is to be repeated thirty-seven times over some ashes which have been taken with three fingers from the centre of a fireplace. About a tenth or a twentieth part of the ashes is to be swallowed. This secures invulnerability for one day and there is a marginal note to say that the efficacy of this charm has been repeatedly proved.

The same *pôngyi* had a quantity of bluish-grey powder, which looked very much as if it might have come from the salsettes or mud-volcanoes at Minbu. With this he marked a *wa* (o) on the forehead, an *a* (အ) on the chest, and a flourish like the letter *S*, from the corners of the mouth to the cheek-bone, on every one of

the dacoits going into action. Most of them died or were magisterially dealt with, but the *pôngyi* survived for ten years and died at the age of seventy in the odour of sanctity in Lower Burma.

In the Tavoy rising in 1888 the following cryptic sayings were put about :—

"On Sunday, when the sun casts a shadow ten feet long, the *naga* shall overcome the *garuda* bird.

On Monday, when the sun casts a shadow five feet long, the deer shall overcome the tiger.

On Tuesday, when the sun casts a shadow eight feet long, the elephant shall overcome the lion.

On Wednesday, when the sun casts a shadow four feet long, the goat shall overcome the dog.

On Thursday, when the sun casts a shadow three feet long, the mouse shall overcome the cat.

On Friday, when the sun casts a shadow twelve feet long, Mahaw-thata shall overcome King Sulani Bramadat.

On Saturday, when the sun casts a shadow nine feet long, the frog shall overcome the snake."

These were predictions of the success of the rising in favour of the Myingun Prince and indicated the proper time to strike on each day when the situation in other respects seemed to promise well for an attack.

As to general religious ideas it may be said that Buddhism is gradually being adopted by the hill tribes and particularly by the Wa. With it they retain in a modified form all their old superstitious observances. Further, it may be said that most of the tribes have no idea of a Supreme Deity. It is not merely that they have no name for such a being (in which they might be supposed to follow the Chinese in saying " The name which can be named is not the Eternal Name "), but that they appear to have formed no conception of such an existence.

Traditions of a deluge are common. The Eastern Tai have it, so have the Karens and the Kachins. Formal graveyards are uncommon, but some of the Chin tribes are a singular exception to this rule. Some other tribes have graveyards, but no monuments, others have more or less lasting memorials, but these are put up anywhere and not necessarily near the graves even of former members of the same family. The Wa bury inside their villages and they have traces of barrows and cromlechs, as also have the Chins. Cairns and *natsingôns* are common, but are not necessarily set up over graves. The wilder races, however, bury their dead in out-of-the-way places and forget the spot as soon as they can.

Where there is a language of religion it is usually esoteric and in many cases seems to be beyond the comprehension of those who make use of it. This is merely an extension of the desire for impressiveness which in Europe preserved the Holy Scriptures in the form of the Vulgate and in Buddhist countries retains the Abhidhamma in Pāli. In the same way the Granth of the Sikhs is not written in the vulgar tongue.

None of the races have, or at any rate admit that they have, idols. There is no bowing down to stocks and stones. The Burman Buddha is practically the same as the Ikon of the Greek Church.

Finally, except for the monks of Burma and the Shan States, who are not in the technical sense ministers of religion, there are no professional hierophants, nor regular clerical classes. The *tumsas* and *mitwes* and *natsaws* and diviners generally do not devote themselves entirely to spiritual duties. When they are not professionally engaged they follow the same occupation as the rest of the villagers and, as often as not, are rather looked down upon than respected.

PLATE XVIII.



Photo.-Block.

Survey of India Offices, Calcutta, 1899

TINGPAN YAO.

CHAPTER XI.

PALACE CUSTOMS AND BURMA UNDER NATIVE RULE. ARCHÆOLOGY.

THE facts in this chapter are taken from the *Lawkabyuha*, *Inyôn* volume, from the Kanni *Sikkè's* Mandalay *Yazawindaw*, or rest on the authority of *ex*-Ministers of State.

The procedure in connection with the coronation of a king of Burma was as follows :

Coronation.

The *Hlutdaw* sent out orders to all the Shan *Sawbwas* and to all governors of provinces and districts commanding them to assemble in the Royal city, bringing the customary presents, on the day fixed for the ceremony.

All the great royal drums, the white umbrellas, the crowns, and royal robes were removed and others were made in their place.

All the turrets on the city wall were carefully repaired, wherever it was necessary.

On the coronation day all the public roads were lined with fences made of plantain stems and sugarcanes, and a double line of flags was set up.

A temporary palace, called *Thagya-nan*, was built in a convenient place, where the King could formally wash his head according to custom before ascending the throne.

Near this was built a large shed, or shelter house, for the accommodation of the Princes, Ministers, and the official body generally.

Pure water from the chief rivers of the country and from noted wells was brought in ceremonial procession and stored in the temporary palace.

Some "golden quicksilver," the nine kinds of precious stones, and consecrated or charmed water were placed in a golden box, which was deposited in the temporary palace.

A collection of all kinds of birds was made and these were kept ready to be released at the temporary palace at the time of the coronation.

The roads from the main palace to the temporary building were lined throughout on both sides, on the coronation day, with troops in full uniform and with all their arms and accoutrements.

The Princes, Ministers, *Sawbwas*, Governors, and officials generally, with their wives, all in full court dress, were mustered together in the palace ready to follow the King in procession to the temporary palace.

When all was ready the King came forth from the palace seated in a *waw*, or State palanquin. At the four corners knelt four maidens, under fourteen years of age, chosen for their beauty and dressed in magnificent garments, *shikhoing* to him.

As soon as the King passed the Moyo-bin (the *mudar* tree), which is the nearest to the main palace, two large drums, called *sidosôn*, began to beat, to announce to the people that His Majesty had left the palace enclosure, and all the dignitaries fell into the procession according to their grade.

On his arrival at the temporary palace the King immediately proceeded to wash his head, according to the prescribed rites, and then changed his dress several times. He then attended a formal service and was anointed with water which had been blessed by eight *pônnas*, who also presented the King with a special kind of flower, which had also been consecrated and was believed to have supernatural power. This was called a *payeitpan* (ပရိတ်ပန်း).

The King then made offerings to the most noted pagodas and a *Nahkandaw* read a list of them aloud, after which they were sent off to be formally presented and the King started on the return journey to the palace.

As soon as the King's *waw* reached the palace gates two other large drums, called the *wunsitônsôn*, were beaten to announce his arrival.

The King made offering of alms to the *pôngyis*, *pônnas*, and to the poor for a period of seven days.

The following royal decrees were issued :—

All prisoners throughout the country were to be set free.

No one was to go fishing for seven days.

The courts were to be closed for seven days.

No one was to be molested, oppressed, beaten, coerced, or imprisoned for seven days.

Every one was to be happy and contented.

These orders were to be issued through the *Hlutdaw*, and the *Myowun* was to proclaim them by beat of drum and gongs in every public way and street for the information of the people.

After the religious ceremony an auspicious day was determined by the *pônnas* for the formal ascending of the throne. The

throne itself was richly decorated and the eight white umbrellas were unfurled and set up on each side.

Two specially selected officials, in full court dress, waited at the foot of the throne to open the golden doors when the King and the Chief Queen made their appearance.

One of the Princes and a high official also took their stand at the foot of the throne, to right and left of it, to proclaim the titles of the King and the Queen as they took their seat on the throne.

The large State drums were brought to the foot of the *Myenan*, the Hall of Audience, to be beaten there when the King ascended and when he left the throne.

A large number of offerings to be presented by the King and Queen to various pagodas were piled up in the Hall of Audience.

The Princes, Ministers, Shan *Sawbwas*, Governors of provinces, and officials of every grade with their wives, all in gala dress, took their places in front of the throne, to the right and left of it, each in the place fixed for his rank. Each was required to bring a present (*Kadaw*) in homage to the King and the Queen.

The troops were drawn up in a double line inside and outside of the Palace. The *Tagā-ni* and the *Yodaw-yu* gates of the Palace were closed and all the presents from the Shan *Sawbwas* and the officers of state were placed together near them.

When everything was ready the King and the Chief Queen came out, followed by all the Queens, Princesses, and maids-of-honour in festival dress, each in their prescribed place. When the King approached the throne the two officers there bowed their heads to the ground and threw open the golden doors. At the same time the four great drums were sounded thrice and all the Princes, Ministers, *Sawbwas*, and officers present prostrated themselves on the ground and *shikhoed* before their majesties. As they took their seats on the throne the *Tagā-ni* and the *Yodaw-yu* gates were thrown open and the presents from the *Sawbwas* and officials were brought in and deposited on the floor of the *Myenan*. The Prince and the officer then came forward and, standing erect, read aloud four times the titles of the King and Queen and then presented the scroll with profound reverences to their majesties, who deposited it in a golden box. The Prince and his companion then knelt down, *shikhoed* three times, and retired. The *Nahkandaw* then read aloud the list of the royal offerings to the pagodas and was succeeded by a *Thandawhkan*, who read over the lists of presents made by the officials and feudatories. These were carried off to the *Letsaungyôn* and *Taikhlu* and then the *mingala-ngwemaung*, the auspicious silvern gong, was sounded five times. The four great drums were then

again beaten, the King and Queen retired, the assembly dispersed, and the enthroning ceremony was completed.

Thrones.

The number of thrones in the palace was considerable. They were of different sizes, carved with different emblems, and were used on different occasions.

The great throne, under the central spire of the *Myenan*, was called the *Thihathana-palin* and was carved all over with representations of lions (*thiha*). It was shaped like an hour-glass or the letter X. Here the King and Queen sat on all great occasions, when homage presents were given by the State officers or when foreign ambassadors were received. On such occasions the eight white umbrellas were always set up, four on each side of the throne, which was approached by gilded gates from a chamber behind.

In the *Zetawun-saung* the throne was carved with the images of the *hentha* (the ruddy sheldrake), and was called the *Hentha-thanapalin*. This throne was used when the King was making religious offerings or performing any specially religious act.

In the *Hpôndaw-saung* the throne was carved with the figures of shells and was called the *Thinkathana-palin*. Here the King used to sit when he received *pôngyis*, or listened to their discourses.

In the *Hman-nandaw* the throne was carved all over with humble-bees and was called the *Bamaya-thanapalin*. It was shaded by a white umbrella, and the King occasionally took siestas here.

In the *Byadeik-saung* the throne was carved with elephants and was called the *Gagyathana-palin*. The King sat here when he made appointments of officers, or when officials were formally dismissed.

In the *Myauk-samôk-saung* peacocks were carved all over the throne and it was called the *Mayanyothana-palin*. Here the King sat when presents of elephants and ponies were brought to him.

The *Taung-samôk-saung* throne was called the *Migathana-palin* and was sculptured with representations of deer. The King sat here when he consulted on matters of State, or anything which implied debate.

In the *Anauk-samôk-saung* the throne was marked by water-lilies and was called the *Padômma-thana-palin*. The King and Queen used this throne to receive separate homage and presents from the wives of officials and other dignitaries.

In the *Hlutdaw* the throne was like the main throne of the palace, and like it bore carvings of lions and was called the *Thihathana-palin*. The King sat here when he issued formal orders, or when he sat in judgment on cases of importance.

The King and queens.

The King bore the title of *Athet-u-san-paing-than-ashin* (Lord of the life, head, and hair of all beings). No property could be held except as from him. He alone could raise or degrade a man. He was infallible, his word was above the law, his wish annulled any law (*a Deo rex* ; *a rege lex*). The Kings of Burma according to traditional law had eight Queens, and King Thibaw's omission to provide himself with this constitutional number caused more concern to decorous, law-abiding people than the massacre of his blood relations.

The Chief Queen was always a sister, usually a half-sister. She was called the *Nammadaw mibuya hkaung-gyi*. She alone had a right to the white umbrella and to sit on the throne with the King.

There were three other principal queens, the *Myauknandaw mibuya* (northern queen of the palace), the *Alènandaw mibuya* (queen of the centre), and the *Anauknandaw mibuya* (queen of the west), ranking in this order and styled *Nanye mibuya*. They used a kind of umbrella called *shwe-pasôn-si-hti* made of cloth interwoven with golden threads.

Next after these came four queens of second rank—the *Myauksaungdaw mibuya* (queen of the north royal apartment), *Taungsaungdaw mibuya* (queen of the southern apartment), *Myauk-shwe-ye-saung mibuya*, and the *Taung-shwe-ye-saung mibuya* (queens of the north and south golden chambers).

These eight queens every constitutional king was bound to have. He might add indefinitely to their number according to fancy, or convenience, or state policy. These minor ladies were called *Myo-sa* or *Ywa-sa mibuya*, according to the towns or villages assigned to them as pin-money by His Majesty. Girls were sometimes sent from China and often from the Shan States for the royal solace and to refuse them was a flat insult, or a grave sign of displeasure.

King Mindôn's title was (သီရိပဝရဝိဇရာနန္ဒယသပဏ္ဍိတမဟာဓမ္မရာဇာဓိရာဇာ။) *Thiri pawara wizara nanda yathapandita maha dhamma raza diraza.*

His Chief Queen's title was (သီရိပဝရာမဟာရာဇိန္ဒာဓိပတိရတနာဒေဝီ။) *Thiri pawara maha razeinta dhipati ratana dewi.* The Alènandaw Queen was styled (သီရိတိလောကမဟာရတနာဒေဝီ။) *Thiri tilawka maha ratana dewi*: the Myauknandaw Queen (သီရိမဟာရတနာမင်္ဂလာဒေဝီ။) *Thiri maha ratana mingala dewi*: the *Anauknandaw* Queen (သီရိရတနာသုစန္ဒာဒေဝီ။), *Thiri ratana thusanta dewi.*

King Thibaw's title was (သီရိပဝရဝိဇရာနန္ဒယသတိလောကာဓိပတိပဏ္ဍိတမဟာဓမ္မရာဇာဓိရာဇာ။). *Thiri pawara wizara nanda yathatilawka dhipati pandita maha dhamma raza dhiraza.*

Supayalat's title was (သီရိပဝရတိလောကမင်္ဂလာမဟာရတနာဒေဝီ။) *Thiri pawara tilawka mingala maha ratana dewi.*

12

List of Mindôn Min's queens and children.

Queens.	*Children.*
(1) Nammadaw Mibuya ...	......
(2) Alènandaw	(1) Supayagyi Princess. (2) Salin Supaya Princess. (3) Supayalat Princess. (4) Supayagale Princess. (5) Shwekodawgyi Princess. (6) Shwekodawgale Princess.
(3) Myauknandaw ...	......
(4) Anauknandaw (1) ...	......
(5) Anauknandaw (2) ...	......
(6) Magwe Mibuya	(7) Mingin Princess. (8) Pyinsi Princess.
(7) Laungshe Mibuya ...	(9) Maingkaing Princess. (10) Pahkangyi Princess. (11) Thibaw Prince. (12) Meiktila Princess.
(8) Saingtôn Mibuya ...	......
(9) Taungsaungdaw Mibuya ...	(13) Sagu Prince. (14) Mohnyin Prince. (15) Mohnyin Princess.
(10) Myauksaungdaw Mibuya (1)	(16) Malōn Prince. (17) Pyinsi Prince. (18) Wuntho Prince.
(11) Myauksaungdaw Mibuya (2)	(19) Kani Princess. (20) Ngapè Princess. (21) Metkaya Prince. (22) Kyannyat Princess. (23) Sinyin Princess.
(12) Taungshweye Mibuya (1) ...	(24) Myingôn Prince. (25) Myingôndaing Prince.
(13) Taungshweye Mibuya (2) ...	(26) Tagaung Princess. (27) Kyundaung Princess.
(14) Myaukshweye Mibuya (1) ...	......
(15) Myaukshweye Mibuya (2) ...	(28) Nyaungyan Prince. (29) Nyaungôk Prince. (30) Kyauksauk Princess.
(16) Sapwèdaung Mibuya ...	(31) Pin Princess. (32) Momeik Princess.
(17) Kohnitywa Mibuya ...	(33) Thônzè Prince. (34) Pinle Prince. (35) Kothani Prince. (36) Panya Prince. (37) Myingôn Princess. (38) Taungtha Princess. (39) Padaing Princess. (40) Myogyi Princess. (41) Minlat Princess.
18) Linban Mibuya ...	(42) Salin Princess. (43) Chèbin Prince. (44) Yanaung Prince.

(19) Thatpun Mibuya	...	(45) Shwegu Prince. (46) Mohlaing Prince. (47) Taungnyo Prince.
(20) Yapwe Mibuya	...	(48) Maingtôn Prince.
(21) Letpansin Mibuya	...	(49) Yindaw Princess. (50) Katha Princess. (51) Myinsaing Prince.
(22) Saywa Mibuya	...	(52) Kyaukhnyat Princess.
(23) Kôkkotha Mibuya	...	(53) Katha Prince.
(24) Thanatsin Mibuya	...	(54) Kawlin Prince.
(25) Myansin Mibuya	...	......
(26) Pwègan Mibuya	...	(55) Sawhla Princess. (56) Yinhkè Princess.
(27) Monè Mibuya	...	......
(28) Hlaingkyun Mibuya	...	(57) Hingan Princess. (58) Taungdwingaung Princess.
(29) Lègya Mibuya	...	(59) A son unnamed.
(30) Tanaungdaing Mibuya	...	......
(31) Thayasin Mabuya	...	(60) Naungmôn Princess. (61) Taingda Princess. (62) Mainglôn Princess.
(32) Thibaw Mibuya	...	......
(33) Magyibinsauk Mibuya	...	(63) Maingnaung Princess.
(34) Htihlaing Mibuya	...	(64) Thagaya Prince.
(35) Ywathit Mibuya	...	......
(36) Ngabinsin Mibuya	...	......
(37) Nanôn Mibuya	...	......
(38) Kyauktalôn Mibuya	...	(65) Nyaunghla Princess.
(39) Migyaungdet Mibuya	...	......
(40) Ywapalè Mibuya	...	(66) Htilin Prince.
(41) Kyamyin Mibuya	...	(67) Pyinmana Prince.
(42) Theinni Mibuya	...	(68—(70) One son unnamed and two daughters.
(43) Kyaukyè Mibuya	...	......
(44) Sindè Mibuya	...	......
(45) Kyaingtaung Miyuba	...	......

The list is as complete as can now be compiled. Probably there were a good many more. Children that died in infancy were not taken note of and there were other children by maids-of-honour and other casual ladies.

Court Rules and Regulations.

All Princes, Ministers, and officers, civil and military, were bound to attend the public audience, held daily at eight in the morning, except on worship days, the full moon, the eighth of the waxing and waning and the last day of the moon. Failure to attend without good cause shown was punished by three days confinement.

All Princes, Ministers, and officers, civil and military, except the four *wungyis* and the two *myowuns*, took their turn to sleep in the palace under the same penalty for neglect to do so.

All Princes, Ministers, and officers, civil and military, were required to go immediately to the palace and write their names in a book kept for the purpose whenever a fire broke out in the city. Omission to do this was punished by exposure in the sun, naked, at noonday.

All petitions were read aloud by a *thandawzin* in audience, both in the morning and evening.

The names of the officers whose turn it was to sleep in the palace were announced in a loud voice by a *thandawzin* at the afternoon audience, in the presence of the King.

The twelve gates of the city were closed every night at nine o'clock and remained closed till six the next morning.

These gates were regularly closed during the day on *kadaw* days when the King received the marriage visits and presents of his officials and subjects.

They were also immediately closed if a fire broke out in the city, or if there were any rising, or disturbance, whether in the city or in neighbouring parts of the country.

The gates were also regularly closed on the occasion of the execution of any member of the Royal Family or official of rank.

A *nahkandaw* brought all petitions and a note of what had been transacted in the *Hlutdaw* during the day for the King's information every evening. The papers were handed to the chief eunuch, who presented them to the King.

All orders of the King were taken first to the *Byè-taik*, where the *Atwinwun* and writers attended, and thence to the *Hlutdaw*.

Petitions to the King had to be sent through the *Byètaik* or the *Hlutdaw*.

In some of the towns and districts taxes were collected by the *awewuns*, the resident governors; in others they were collected under the governors, by officers specially sent for that purpose by the King. The revenue when collected was sent first to the *Hlutdaw*, thence to the *Byètaik*, and then to the *Shwetaik*, the treasury, or to the King.

On appointment every officer had to take a formal oath of allegiance to the King.

The wives of the governors of districts were not allowed to accompany their husbands, but had to remain in the royal city as pledges for the fidelity and good behaviour of their husbands.

The Shan *Sawbwas* and the governors of all districts had to come to Mandalay to attend on a *kadaw* day to pay their homage to the King once every year.

In the *Myenan*, or Hall of Audience, on the occasion of the formal rendering of homage to the King on a *kadaw* day, the last to arrive was always the *Eingshemin*. When he had taken his seat on the left of the throne, the gate was shut and the King and Queen then made their appearance.

When the King and Queen had retired the Crown Prince was the first to leave the Audience Hall and after him the Princes, Ministers, and other officials went out in an orderly way, each according to his rank.

The Princes and officials whose turn for duty it was in the palace began their service at six in the evening. They signed their names at the *Byètaik* before going in and the night was divided into three watches—from six in the evening till midnight, from midnight till three in the morning, and from three until daylight. All were on duty throughout the day, until they were relieved at six in the evening by the next turn.

The troops stationed in the palace were relieved once a month.

When the King left the palace, a salute of three guns was fired and the city gates were at once shut and remained shut until the King's return. The Princes, Ministers, and officials generally followed in the King's train, except those who were especially singled out to keep guard over the palace during the royal absence; non-attendance was punished with confinement at pleasure.

On the first day of the year (*Hnit-thit* or *Hnit-san tayet*) a salute of three guns was fired from every one of the twelve gates of the city to announce the beginning of the year to the people.

No cases at law were considered settled unless both suitors had received and eaten a packet of *lapet* (pickled tea). This applied to all courts except the *Hlutdaw*, where decisions were considered final. After *lapet* had been eaten or received by both suitors no appeal lay, no matter what fresh evidence might be produced.

If any party nevertheless lodged an appeal, he was taken round to the sound of a gong and flogged at the corners of all the public roads.

The same punishment (*maung kyaw*) was inflicted—

- (*a*) on those who scraped off or stole gold leaf from pagodas;
- (*b*) on those who coined false money;
- (*c*) on those who seduced ladies of the court;
- (*d*) on incendiaries;
- (*e*) on officials who took bribes;
- (*f*) on distillers of spirituous, or fermented liquor; and
- (*g*) on dacoits.

Gamblers, drunkards, cow-butchers, and those who were convicted of habitually eating beef were proclaimed by gong in the same way, but were not flogged.

Every year, on the fifth *lasan* of *Waso*, that is to say, at the beginning of Lent, when the inauguration festival was over, an officer mounted on an elephant went through the town, with beat of drum, proclaiming the commencement of Lent and announcing that, by edict of the King, no large fish or dead meat was to be hawked about in any of the royal towns during the four months of the Lent, and that all good citizens should keep strict fast.

Homage (*kadaw*) was paid to the King and the Chief Queen three times in the year at the *Myenan*. These three *kadaw* days were the *Hnit-thit kadaw*, homage at the beginning of the Burmese year (in April); the *Wa-win kadaw*, at the beginning of Lent (in July); and the *Wa-gyut kadaw*, at the end of Lent (in October) On new year's-day and the first of Lent, as a rule, only the Princes, Ministers, and officials in the royal city declared their fealty, but the end of Lent was the great homage day, and then all Princes, Ministers, officers of State, the Shan *Sawbwas*, and the governors of districts from all parts of the kingdom came to Mandalay to render vows of allegiance.

The ladies of the Palace and of the Royal Family and the wives of all ministers and officials, also paid yearly homage to the King and the Queen, but their fealty was declared not in the main Hall of Audience, but in the *anauk-samôk-saung*, a chamber in the west, or ladies' quarter of the Palace.

The King held ordinary audiences twice a day, in the golden palace, sometimes in the *lapetye-saung* (the tea-room), sometimes in the *bôndaw-saung* (the crown or glory room). The usual hours were half past eight in the morning and about three in the afternoon.

The morning audience was the more important and all officials in the city had to attend then, for it was then that ordinary matters of government and economy came up for discussion. In the evening there were usually only the Ministers and the officials on duty for the guard of the Palace and the affairs discussed were more or less personal, or connected with Palace affairs.

The same officers, or at any rate those on duty, were usually in attendance again at seven in the evening, when King Mindôn frequently conversed with them for an hour. At this audience the *thandawsin* read over the list of those told off to sleep in the Palace.

The King had four meals in the day and was then, as a usual thing, waited on by all the Queens and Princesses. The hours were, in the morning before the eight o'clock audience, about mid-day, again before the afternoon audience, and supper at night.

Only the Queen of highest rank or personal favourites might directly wait on the King and give him food or drinking water. The junior Queens and the Princesses who were not in especial favour did no more than fan His Majesty or present him with water to wash his hands.

Every dish at every meal was tasted in the King's presence before it was offered to him to guard against danger of poisoning.

Anything that remained over after the King had finished was eaten by the Queens and Princesses specially told off for duty on the day.

At night, when the King retired to his chamber, certain of the maids-of-honour, specially chosen for their book learning and accomplishments, commenced reading religious books or birth-stories of the Buddhas and continued all night through until daylight, unless otherwise ordered.

This duty was taken by them in regular turn. They sat immediately outside the royal bed-room.

King Mindôn in the early part of his reign used to pay a visit to each of his Queens in their own apartments once every month. After the rebellion of the Myingôn Prince, in 1866, however, he gave up this habit and as a general rule only visited a Queen in her own quarters when she was sick. He was, however, frequently in the rooms of the four Queens of the first rank and especially in the Chief Queen's apartments. It was common for him to receive the visits of the wives of prominent officials in her chamber.

The King was always attended on by the Queens, when he dressed, combed his hair, washed his face or his hair, or took a bath.

Some of the Queens and Princesses were always on duty according to a regular roster, and they followed the King everywhere in the ladies' quarters of the Palace, into the rooms of the four prinicipal Queens, or through the gardens. There were always maids-of-honour and eunuchs in attendance on the ladies for duty.

The royal etiquette was very elaborate. No one was allowed to come into the King's presence without previous permission or command. No one could speak to him without first being spoken to. After the King had entered a room or garden no one was allowed to approach it unless sent for. None might leave the presence, or even change position till the King moved. Smoking was forbidden

in his presence. Except the four principal Queens none might wear shoes in his presence. Except these four Queens no person in the train of the King might carry an umbrella. This privilege was latterly granted also to the Princesses called Supaya, the daughters of the Alènandaw Queen. The only persons allowed to sleep in the *hmannandaw* (the crystal palace) besides the King were the four principal Queens, each of whom had a room near the royal bed-chamber. If anything was handed to the King, the person presenting it had to *shikho* before doing so. The same was done when the King handed anything back. Everything belonging to the King was styled *daw* (royal) and any one moving or touching any of these royal articles had to *shikho* before touching it and to *shikho* again when it was laid down. Arrival in the King's neighbourhood was marked by three obeisances and the same was done on his retiring. Except the Chief Queen no one could address His Majesty even in the course of a conversation without *shikhoing*, clasping the hands, and bowing the head to the ground at every sentence. The queens, princes, princesses, and ministers, and of course all of lesser degree knelt whenever the King or the Chief Queen came in sight, and *shikhoed* on their arrival.

The Queens and Princesses were enjoined to kneel to one another and to use the form *paya* (gracious lady), each according to her rank.

The Queens, including the Chief Queen and the grown-up Princesses, had their meals in their own apartments, attended on by the maids-of-honour assigned to them.

Except the Queens, Princes, and Princesses no one was allowed at any time to use an umbrella within the Palace enclosure. They alone also were allowed to wear shoes or sandals on the platform of the Palace, and no one else had the right to ride or drive in the Palace enclosure, and they only out of sight of the King.

No one might turn his feet in the direction of the King. At night all beds were so laid that the heads might be directed to the King's apartment and the feet radiated outwards.

No men, of whatever rank, men were allowed to enter the womens' court, and no women were allowed to go to the men's quarter, unless they were required to do so by the King or the Chief Queen.

No Prince, Minister, or official of whatever rank could obtain permission to see the King, except by application made through the chief of the eunuchs or any one of the eunuchs in cases of urgency.

Queens, Princesses, and maids-of-honour could not leave the Palace without the King's permission and an order obtained from

him addressed to the *Anaukwuns* in charge of the women's court and the western gate of the Palace to authorize them to go out. These orders were conveyed through the eunuchs to the *Anaukwuns* and specified the time allowed.

The four principal Queens—the Nammadawpaya, the Alènandaw, the Myauknandaw, and the Anauknandaw—might grant permission to their own maids-of-honour to leave the palace, and could issue orders to that effect to the *Anaukwuns*.

Each Queen and grown-up Princess had a room of her own assigned to her according to her rank in the Palace. The *Thamikanya* (daughters of the Shan *Sawbwas*) and *Hman-nan Apyodaw* (maids of the crystal palace) were maids-of-honour attached specially to the King, and also had separate rooms assigned to them.

The other maids-of-honour, who attended on the Chief Queen and the Alè Myauk and Anauk Nandaw *Mibuyas*, and on the four Princesses, Salin Supaya, Supaya-gyi, Supaya-lat, and Supaya-gale, lived in a special row of chambers built for them, between the inner wall and the canal on the western side of the palace. The above female attendants alone had the right to the title of *Apyodaw*. The maid-servants of the other Queens and Princesses were called simply *apyo*, plain maids, and had no particular place assigned for them to live in.

The Chief Queen and the other three principal Queens had no special turn. They were assumed to be in attendance on the King at any time and always. The remaining Queens were divided into two bevies—the roster of the right and the roster of the left—for service with the king by day and by night, according to the roll, in regular turn. The Myauknandaw Queen had charge of the bevy of the left, and the Anauknandaw was responsible for the right bevy, and they saw that the due number were daily told off and in the proper order.

The Princesses had no fixed turns, but they were expected to show themselves twice or thrice during the day and to render any service that might offer. The maids-of-honour were in attendance day and night according to a formal muster-roll. The eunuchs were also in constant attendance.

The wives of Ministers, officials, and governors of districts were required to attend in the Palace every day, but not necessarily to do more than report themselves as having attended.

The Crown Prince (*Eingshemin*) and the Princes who were sons of the King were allowed to come as far as the steps of the

Myenan riding or driving, and up to that point also they were allowed the use of their golden umbrellas, of which the *Eingshemin* had four and the other princes two each. They might also wear their shoes as far as the *Mabin* door near the *Byètaik*. Ministers and all officers of State knelt before the Crown Prince.

Ministers and all other officials had to leave ponies, carts, and umbrellas outside the palace enclosure. They might wear their shoes as far as the steps leading up to the *Myenan*, and their servants were allowed to carry over their heads *hkamauk* to shelter them from sun or rain up to the same point. These *hkamauks*, made of bamboo spathes, were often much larger than a European umbrella.

The Crown Prince, the Princes, and the four *wungyis* were allowed to enter by the *Tagā-ni*, the large red gate in front of the *myenan*. Other officials of all grades might only enter or go out by the *ma-lwè* wicket.

The minor Queens and the Princesses were allowed to use their golden umbrellas and to wear their slippers as far as the *hmannandawpauk*, the entrance to the crystal palace. There shoes, umbrellas, and attendants were all left behind. From that point they had to carry their betel-boxes, their pickled-tea caddies, their spittoons, and their memorandum books themselves, and took them about with them wherever they might be required when they were on duty.

The maids-of-honour were allowed to wear their slippers on the palace platform as far as the door of the chamber where their attendance was required.

The wives of Ministers and officials were subject to the same rule as their husbands. They left their carriages outside the palace gates and went to the Audience Hall steps sheltered by *hkamauks* held by their maid-servants. At the foot of the steps shoes and *hkamauks* were left behind.

Court feasts.

There were feasts in all the twelve months of the Burman year in which the King and the court as well as the people took part. Some of these were national, some peculiar to Mandalay, and some were almost exclusively court functions. The chief of these according to the months of the Burmese year were the following:—

(1) In the month of *Tagu*, the end of March and beginning of April, the *Hnitthit Thigyandaw pwè*, the New Year's Day and Water Feast.

On New Year's Day holy water from the Ganga river of Burma, the Irrawaddy, was brought (in *Nyaung-ye O*, the earthen vessel,

with flowers and leaves commonly used at all pagodas) by high court officials with much pomp and ceremony and delivered to the King. During the whole three days' time that the *Thingyan nat* dwells upon earth at the beginning of the Burman year, His Majesty distributed this water to the guardians of the various temples in Mandalay and Amarapura. With the water thus rendered doubly sacred, by the blessing of the priests and the passage through royal hands, the sacred images were solemnly washed.

On New Year's Morning the King and the Chief Queen began the *Thingyandaw* by washing their hair with water brought from the hollows of sacred trees which grew in Bôk and Kyuwun, villages in the Lamaing township. During this ceremony the *pônnas*, or royal astrologers, invoked the *nats* of *hôn*, fire, and *Gyo*, the planets, and called upon them to pour down blessings on the royal heads. The trees in the Kyuwun circle were cotton trees. Those in Bôk are not specified. The royal head washing was conducted in two *thingyan tazaungs* (pavilions) in the north garden of the Palace.

In the town the people threw, and continue now to throw, water over one another in exactly the same way as is done all over Burma on the first three days of the New Year.

(2) In the month of *Kasôn*, April-May, the *Nyaung-ye-daw pwè*, the Consecrated Water Feast.

On the fourteenth day of the waxing of the month, officials specially chosen for the purpose brought up water drawn from the Irrawaddy, the Ganges of Burma, and stored it carefully away, usually in the Court-house east of the Palace, which was known as the *ashe nyaung-ye*.

Next day, the day of the full moon, the water was divided into two; one half was taken by one party and was presented to the King. This was called the *nyaung-ye*. The rest of the officials took the other half of the water and delivered it to the Chief Queen. This was called the *anauk nyaung-ye*.

On the same day of the full moon the King formally handed over the *nyaung-ye* to the gentlemen of the Court, to be used for cleansing the sacred images within the Palace walls.

The next day the Chief Queen and her maids-of-honour in like manner handed over the *anauk nyaung-ye* to be used for the same purpose.

The festival was marked by grand dramatic performances (*zat pwè*) held on the night of the new moon, on the western front of the Palace.

When, as sometimes happened, New Year's Day fell in *Kasôn*, the *Hnitthit pwè* was of course held in that month and not in *Tagu*.

(3) In the month of *Nayôn* (May-June) there were four feasts celebrated—

The *Mo-nat Puzaw pwè*, the festival of the Rain Spirit.

The *Sadaw-pyan pwè*, or *Patama Sa-pyan-sa-me pwè*, the examination for the admission of novices to the sacred order.

The *Hnit-thit-kadaw pwè*, the New Year's "Beg pardon" festival.

The *Mingala lèdaw pwè*, the Royal Ploughing festival.

Monat Puzaw was kept up in the first week of the new moon by the *sadaws*, who met together in a building situated to the east of the Palace in front of the *Hlutdaw* and there offered up the prayers known as the *nga payeik*, for kindly rain. The prayer was also called the Nga-yan Min's prayer. The Nga-yan Min was a Bodhisattva, or embryo Buddha, in the form of the king of the murrel fish (*Ophiocephalus marulius*). In a prolonged drought his lagoon dried up and the prayer which he formulated is still used in all parts of Burma.

The *pônnas*, or Brahmin priests, met at the south gate of the city (now called Fort Dufferin), where two temporary *tazaungs*, seven-tier buildings, tapering to a point at the top, were erected to hold the figures of the *nat* of rain, which was in human form, and the *nats* of the waters, images of an alligator, a frog, and a fish (*nga-yan*, the murrel or snake-head). The *pônnas* and the people knelt before these and offered up prayers for rain and then carried them with great pomp and show to the Irrawaddy, where they were thrown into the river, the Ganga stream of Burma. The King did not take any special part in this ceremonial festival.

On the eighth day of the moon, the public examination, *Sadaw-pyan pwè*, of the senior pupils of the different monasteries began at the Thudhamma and Patan *zayats* at the foot of Mandalay hill. The principal *pôngyis* conducted the examination, and in King Mindôn's time it was always carried on under his royal direction.

The *Hnit-thit Kadaw*, the paying of homage by feudatories to their lord, by inferiors to those in authority, and by juniors to their elders, was always observed in the month of *Nayôn*. The Shan *Sawbwas*, the members of the Royal Family, and all officials came and bowed before the King, and every one throughout the country had to do the same to parents and to the monks, their teachers. This audience was always the most striking and picturesque of the year.

Formerly the Water of Allegiance had to be drunk, as it still is in Siam, but latterly it had been given up at the Burmese court.

The *Mingala Lèdaw pwè* consisted in the ploughing of a field in person by the King, followed by the ploughing of other fields by princes and high officials. The ploughs and harrows were always highly decorated (they were called gold and silver), and the harness of the bullocks was always very gay and sometimes costly. The trappings of the King's bullocks were adorned with gold and jewels. The King usually came out dressed in the uniform of a General in the Army and his train were all in the full dress uniform of their rank or office. The fields chosen were the Royal lands east of Mandalay about a mile from the city wall and they were ploughed not on any fixed day, but when there was enough water to soften the ground. While the ploughing went on the *pônnas* offered up prayers to their fifteen Hindu gods, and the *natsayas*, *natôks*, and *natsaws*, who were both male and female, invoked the thirty-seven chief or noble *nats* of Burma. The object of the ceremony was, of course, to beseech a good harvest for the country.

(4) In the month of *Waso* (June-July) there were two chief feasts, the *Pyinsin-daw kan pwè*, or *Pyinsin Shin-pyu*, and the *Wawin kadaw*.

The *Pyinsin Shin-pyu* was the admission into the monasteries of novices. The feast was held on the eighth of the waxing moon, when the public examinations which began in the month of *Nayôn* were closed, and those who qualified entered the monasteries, as novitiants, after the ceremonial processions familiar to all who have been in Burma. All Burmans, from the highest to the lowest, go through the *Shin-pyu*, entering the monasteries for their studies and putting on the yellow robe for a period which varies from three months to three years. The ordinary age for entering the Order is between twelve and fifteen years of age. Special *pwès* were held on these occasions at the Thudhamma and Patan *zayats* at the foot of Mandalay Hill.

The Buddhist Lent begins with the full moon of *Waso* and on that day all the members of the Royal Family and the chief officials presented themselves in court dress before the King and Chief Queen and offered the *Wawin kadaw*, homage due at the beginning of Lent. This took place in the great Hall of Audience.

(5) In the month of *Wagaung* (July-August) the *Sayedan Pwè*, the presenting of religous offerings to the monks on the eighth waning of the month, took place. The King regularly sent presents to a number of priests and monks, whose number was equal to the number of the years of his age.

During the month of *Wagaung* also was held the festival of the Shwe-pyin Nyi-naung *nats* in the *Nat-kun* at Taungbyôn and it was customary for the King to send offerings, usually of clothing, by the hands of specially chosen officers (*nat-ôks* and *natteins*).

(6) In the month of *Tawthalin* (August-September) the *Hledaw pwè* or *Ye-thabin Hle pwè*. These were the annual boat races held on the Irrawaddy river, under the King's patronage.

They were carried on from the second to the fourth waning of the month under the supervision of ministers at the Paik-kyôn Taga landing-place. The prizes were turbans and waist-cloths.

(7) In the month of *Thadingyut* (September-October) the *Simi Myimmo-dạw pwè* (puppet shows, *Yôkthe pwè*) were held round the palace for the whole week before the full moon. On the day of the full moon offerings were sent by the King and by all the people to the most important shrines. These offerings were usually placed on processional ships, steamers, or boats, and sometimes on figures of animals, which were taken with bands of music and men dancing in front to their different destinations. To the east of the palace was raised a model of the Myimmo-taung (Mount Meru), which was brilliantly illuminated at night and was visited by every one in the town on the three days succeeding the new moon. As this was the close of the Buddhist Lent, after the full moon, all the royal princes and princesses and the high officials made their obeisances to the King and the Chief Queen. Merchants and rich people are specially mentioned as having to do homage at this time.

For a week after the full moon the towns all over the country decorated the pagodas and roads with lights and coloured lanterns, and the eighteen pagodas of Mandalay and the roads leading to them from the Palace were lighted up at the King's expense. Theatrical performances were also given at all these places at State expense from the full moon to the sixth of the waning.

(8) In the month of *Tasaungmôn* (October-November) there were two chief feasts—the *Kateindaw pwè* and the *Tazaungdaing pwè*.

The *Kateindaw* was the presentation to the monks of all the items of the sacred robe. According to the ancient custom in Mandalay and Amarapura these were supposed to be: a piece of longcloth dyed yellow, a needle and thread, a plank for washing the cloth on, a filter, and occasionally a few other articles. This was carried out with great formality during the day, no single monk in any of the monasteries being omitted. At night a curious ceremony took place in a large temporary shed, built for the purpose on the west face of the palace. The wives of the court officials met here to

weave cloth for sacred purposes. The entire process of spinning, weaving, and making thread had to be carried out in the twelve hours between sunset and sunrise. For this purpose cotton in its crude state was supplied in huge heaps by the King. If any lady were caught smuggling in ready-made cloth or thread, she and her husband were set up to dance to the strains of music before the rest, wearing the smuggled cloth and singing a song, composed for the purpose, which declared that they were noted for their skill in weaving. The dyeing and stitching were done next morning. When the *thingans* were finished they were brought before the King and he distributed them to the various temples, sometimes called the Seven Nanthin Pagodas, to be used for draping the most sacred images in them.

The day of the full moon closed with the worship by the Royal Family and all the high officials of the fifteen chief spirits (really Hindu dieties), whose metal images were bestowed in a three-tier roofed house near the palace.

The *Tazaungdaing pwè* was the burning at the principal shrines in the house, on the eighth day of the waning, of eight large *pyathats*, or ornamental wickerwork spires, with numerous small pagodas, also made of bamboo. These were carried in procession to the spot by the court officials after having been displayed to the King and the Chief Queen.

(9) In the month of *Nadaw* (November-December) was held the *Maha Peinnè Pwè-daw*. On this occasion the grain first reaped from the royal fields of the *lamaing*, the crown predial land, was sent by the King to the Arakan pagoda as an offering to the Maha Peinnè *nat*, who seems to correspond with the Hindu god Bisnath. The grain was carried by the *Lamaing Wuns* and *Lamaing Sayes* in huge receptacles made in the shape of a buffalo, a bullock, and a prawn, and in these were placed respectively paddy, millet, and bulrush millet. The Maha Peinnè *nat*, mounted on a peacock, was brought before the King on the day when the Pleiades and the moon (the *Kyattiya* and *Yawhani*) rise together, and the King, after paying homage to the spirit, scattered, in the name of the *nats*, pieces of silver, known as *kyulôn*, and lengths of cloth among the people. The *kyulôn* were silver pieces received at this time of the year from the Bhamo division.

(10) In the month of *Pyatho* (December-January) was held the *Myingin-daw pwe.*

These were pony races, held before the King and the Chief Queen, on the eastern side of the Palace, where grand stands were built for the occasion. They were divided into two classes: first,

where the competitors were Princes, officials of rank, and officers of the army, the events were—

elephant fights, with and without riders;
elephants attacking a tiger, stuffed or modelled;
throwing spears from horseback at a gallop at targets placed on poles fifteen, fifty, and an hundred cubits in height, standing at intervals one after the other;

Secondly, where the competitors were officers and men of the cavalry. They rode standing in the saddle, and the ordinary events were—

tilting at the ring;
cutting a chatty through horizontally so that no piece of it fell to the ground, the chatty being placed on a pole;
shooting at targets;

Any pony, or rider falling was placed in a pound and only released on payment of a heavy penalty. The money thus obtained went to swell the value of the prizes given to the successful competitors.

The orchid known as the *tazinban* or *thasin* was collected and sent to the court during the month of *Pyatho* by the Shan *Sawbwas.*

(11) In the month of *Tabodwè* (January-February) was held the *Mibôn Yagu-daw pwè.*

On the night of the fourteenth waxing of the moon the royal soldiery were employed in cooking a starchy sort of rice, flavoured with cocoanut, butter, and highly scented. For some days before the fourteenth it was their duty to collect various scented woods, sandal-wood and the like, from the jungles. When the rice was cooked, it was taken on the day of the full moon to the King, who sprinkled consecrated water on it and then sent this *yagu* out to all the pagodas and monasteries in Mandalay and Amarapura. All who could afford it cooked and presented this rice gruel throughout the whole country.

(12) In the month of *Tabaung* (February-March) was held the *Paya pwè* or *Thè-pôn Zedi-daw pwè.*

The king sent offerings for the *nats* or *nat-balus*, who guard the four gates of the city, and for the thirty-seven *nats* of Burma. Pagodas of sand were reared to gain or retain good health. *Tabaung* is the great month for worshipping the spirits all over the country, and royal offerings were sent to the Mahagiri or Māgayi *nats* of Popa hill in the Myingyan district. The Aungzwa Māgyi and the Ngazi Shin *nats* were always specially remembered.



Photo-etching.

Survey of India Offices, Calcutta, November 1895.

SIYIN MODE OF COIFFURE.

THE LANGUAGE OF THE BURMESE COURT.

Spoken by the King, Queens, Princes, and Princesses among themselves.

ထွက်တော်မူသည် ...	... Htwet daw mu thi	... To go out, or come out.
ဝင်တော်မူသည် ...	... Win daw mu thi	... To go in, or come in.
စက်တော်ခေါ်သည် ...	... Set daw hkaw thi	... To sleep.
ပျော်တော်မူသည် ...	... Pyaw daw mu thi	... To be sound asleep.
နိုးတော်မူသည် ...	... No daw mu thi	... To awake.
ဆံတော်ရှင်းတော်မူသည် ...	... San daw shin daw mu thi ...	... To comb the hair.
မျက်နှာသစ်တော်ရေ သုံးတော်မူသည်	... Myet-hna thit daw ye thôn daw mu thi	... To wash the face.
မျက်နှာသစ်တော်ရေ ကျသည် ...	... Myet-hna thit daw ye kya thi ...	... To have finished washing the face, also to awake.
သင်္ကြန်တော်ခေါ်တော်မူသည် ...	... Thin-gyan daw hkaw daw mu thi	... To wash the head.
သင်္ကြန်တော်ကျသည် ...	... Thin-gyan daw kya thi ...	... To have finished washing the head.
ချိုးတော်ရေသုံးတော်မူသည် ...	... Hkyo daw ye thôn daw mu thi ...	... To bathe.
ချိုးတော်ရေကျသည် ...	... Hkyo daw ye kya thi ...	... To have finished bathing.
ပွဲတော်တည်သည် ...	... Pwè daw tè thi	... To eat.
ပွဲတော်ကျသည် ...	... Pwè daw kya thi	... To have finished eating.
ပန်တော်ပန်းဆင်တော်မူသည် ...	... Pan daw pan sin daw mu thi ...	... To deck the head with flowers.
လိမ်းတော်သနပ်ခါး လိမ်းတော်မူသည်	... Lein daw tha-nat-hka lein daw mu thi	... To powder the face.
ပေါင်းတော်ဆင်တော်မူသည် ...	... Baung daw sin daw mu thi ...	... To put on the turban.
တန်ဆာတော်ဆင်တော်မူသည် ...	... Ta(n)za daw sin daw mu thi ...	... To don the royal robes.
ဦးကပ်တော်ဆင်တော်မူသည် ...	... U-kat daw sin daw mu thi ...	... To put on the crown.
14 မကိုဋ်တော်ဆင်တော်မူသည်	... Ma-geid daw sin daw mu thi ...	... To put on the crown.
ဝတ်လဲတော်ဆင်တော်မူသည် ...	.... Wut-lè daw sin daw mu thi ...	... To dress.
လက်ဝတ်တော်ဆင်တော်မူသည် ...	... Let-wut daw sin daw mu thi ...	... To wear bangles.
နားဒေါင်းတော်ဆင်တော်မူသည် ...	.... Na-daung daw sin daw mu thi ...	... To wear ear-rings.

Spoken by the King, Queen, Princes, and Princesses among themselves—continued.

လည်ကပ်တော်ဆင်တော်မူသည် ...	... Let-kap daw sin daw mu thi ...	... To wear a necklace.
ဆံတော်ချသည် ...	... San-daw hkya thi	... To shave.
လက်သဲတော်ချသည် ...	... Let-thè daw hkya thi ...	... To cut the finger nails.
စံတော်မူသည် ...	... San-daw mu thi	... To sit, to enjoy.
ထိုင်တော်မူသည် ...	... Teing daw mu thi	... To sit.
ရပ်တော်မူသည် ...	... Yat daw mu thi	... To stand.
လှဲတော်မူသည် ...	... Hlè daw mu thi	... To lie down.
နားထောင်တော်မူသည် ...	... Na-htaung daw mu thi ...	... To hear, or listen.
မြို့တည်တော်မူသည် ...	... Myo tè daw mu thi	... To found a city.
မြို့သိမ်းတော်မူသည်။ ...	... Myo thein daw mu thi ...	... To take possession of a city.
နန်းတက်တော်မူသည် ...	... Nan tet daw mu thi	... To ascend the throne.
နန်းစံတော်မူသည် ...	... Nan san daw mu thi ...	... To reign.
နန်းကျတော်မူသည် ...	... Nan kya daw mu thi ...	... To dethrone.
ဘိသိက်ခံတော်မူသည် ...	... Beit-theit hkan daw mu thi ...	... To be anointed king.
ကတော့ခံတော်မူသည် ...	... Ka-daw hkan daw mu thi ...	... To receive homage.
ညီလာခံတော်မူသည် ...	... Nyi-la hkan daw mu thi ...	... To hold a levee, give audience.
ဥပုသ်တော်ယူတော်မူသည် ...	... U-pôt daw yu daw mu thi ...	... To keep fast.
ဖွါးတော်မူသည် ...	... Hpwa daw mu thi	... } To give birth to a child.
မီးရှူးမြင်တော်မူသည် ...	... Mi-shu myin daw mu thi ...	... }
မြပခက်တော်တင်သည် ...	... Mya-pa hket daw tin thi ...	... To put in the cradle.
မာတော်မူသည် ...	... Ma daw mu thi	... To be in good health.
မမာတော်မူသည် ...	... Ma ma daw mu thi	... To be unwell.
သက်သာတော်မူသည် ...	... Thet-tha daw mu thi... ...	... To get better.
တိုးတော်မူသည် ...	... To daw mu thi	... To get worse.
ခေါင်းတော်ခဲသည် ...	... Hkaung daw hkè thi... ...	... To have a headache.
မူးတော်မူသည် ...	... Mu daw mu thi	... To suffer from giddiness.
ကိုယ်တော်နာသည် ...	... Ko daw na thi	... To have pains in the body.

လက်တော်နာသည် ...	... Let daw na thi	... To have pains in the hands.
ကြည်တော်မူသည်	.... Kyi daw mu thi	... To feel happy.
ထိုင်ပင်တော်မူသည် ...	.... Teing bin daw mu thi ...	... To consider.
လက်ဆေးတော်ရေသုံးတော်မူသည်	.... Let se daw ye thôn daw mu thi ...	... To wash the hands.
လက်ဆေးတော်ရေကျသည်	.... Let se daw ye kyaw thi ...	... To have finished washing the hands.
ဆေးပွဲတော်တယ်တော်မူသည်	.... Se pwè daw tè daw mu thi ...	... To take medicine.
ကွမ်းပွဲတော်တယ်တော်မူသည်	... Kun pwè daw tè daw mu thi ...	... To take betel.
ဆေးလိပ်တော်သောက်တော်မူသည်	.... Se-leik daw thauk daw mu thi ...	... To smoke a cigar.
သောက်တော်ရေသောက်တော်မူသည်	.... Thauk daw ye thauk daw mu thi	... To drink water.
ဘွဲ့သနားတော်မူသည်	.... Bwè thana daw mu thi ...	... To grant a title.
အရာသနားတော်မူသည်	.... A-ya thana daw mu thi ...	... To appoint to an office.
စလွယ်သနားတော်မူသည် ...	... Sa-lwè thana daw mu thi ...	... To grant the *Salwè*, chain of the Burmese order.
နှလုံးတော်မသာတော်မူသည်	.... Hnit-lôn daw ma tha daw mu thi	... } To be uneasy.
စိတ်တော်မကြည်တော်မူသည် ...	... Seit-daw ma kyi daw mu thi ...	... }
ပျော်တော်မူသည်	... Pyaw daw mu thi	... To enjoy.
ခေါ်တော်မူသည် ...	.... Hkaw daw mu thi	... To call, summon.
ခိုင်းတော်မူသည်	... Hkeing daw mu thi	... To send.
မေးတော်မူသည်	... Me daw mu thi	... To ask, to enquire.
အမိန့်တော်ရှိသည်	.... A-mein-daw shi thi	... To speak, order.
အမိန့်တော်ပြန်သည်	... A-mein-daw pyan thi ...	... To pass an order.
အမိန့်တော်ထုတ်သည် ...	.... A-mein-daw htôk thi ...	... To issue an order.
အမိန့်တော်ကျသည် ...	... A-mein-daw kya thi	... To have issued an order.
အမိန့်တော်မှတ်သည်	... A-mein-daw hmat thi ...	... To record an order.
ကံတော်ကုန်တော်မူသည်	.... Kan daw kôn daw mu thi ...	... To die (*Lit.*, to complete the sum of merits).
နတ်ပြည်စံတော်မူသည် ...	... Nat pyi san daw mu thi ...	... *Ibid.* (*Lit.*, to enjoy the realm of *Dewas*).

Spoken by the King, Queen, Princes, and Princesses among themselves—continued.

မြတ်နိုးတော်မူသည်	Myat-no daw mu thi	To love, esteem.
သဒ္ဒါတော်မူသည်	Thad-da daw mu thi	To be kindly, or well disposed.
အရေးယူတော်မူသည်	A-ye yu daw mu thi	To take notice.
စိတ်ဆိုးတော်မူသည်	Seit so daw mu thi	To be angry.
အပြစ်ပေးတော်မူသည်	A-pyit pe daw mu thi	To punish.
ရာဇဝတ်ပေးတော်မူသည်	Ya-za-wut pe daw mu thi	*Ibid.*
အပြစ်တင်တော်မူသည်	A pyit tin daw mu thi	To blame.
မြည့်တော်မူသည်	Myi daw mu thi	To find fault with.
ရယ်တော်မူသည်	Yi daw mu thi	To laugh.
ငိုတော်မူသည်	Ngo daw mu thi	To weep.
မြင်တော်မူသည်	Myin daw mu thi	To see.
ချီတော်မူသည်	Hkyi daw mu thi	To carry.
ယူတော်မူသည်	Yu daw mu thi	To take.
ကိုင်တော်မူသည်	Keing daw mu thi	To hold.
သနားတော်မူသည်	Thanā daw mu thi	To give.
အခခန့်တော်မူသည်	A-hka hkan daw mu thi	To appoint to an office.
ဆုချတော်မူသည်	Su hkya daw mu thi	To reward.
ဆုသနားတော်မူသည်	Su thana daw mu thi	*Ibid.*
လစာသနားတော်မူသည်	La sa thana daw mu thi	To give a salary.
နားတော်တွင်းသည်	Na-daw twin thi	To bore the royal ears.
နားတွင်းတော်မူသည်	Na twin daw mu thi	Used when a royalty bores the ears of others
အလှူပေးတော်မူသည်	A-hlu pe daw mu thi	To give offerings.
ဘေးမဲ့လွှတ်တော်မူသည်	Be mè hlut daw mu thi	To give pardon (actual or anticipatory).
လက်ဖွဲ့တော်မူသည်	Let hpwè daw mu thi	To drive.
မိဖုရားမြှောက်တော်မူသည်	Mi-bu ya hmyauk daw mu thi	To take as queen.
ခြေတော်တင်သည်	Hkyi daw tin thi	To raise to the royal bed (not as queen).
သူကောင်းပြုတော်မူသည်	Thu kaung pyu daw mu thi	To confer an office of dignity.

တံဆိပ်အပ်တော်မူသည်	... Ta-seik at daw mu thi ...	... To give a seal (to a monk).
ဘုရားရှိခိုးတော်မူသည် ...	... Bu ya shi hko daw mu thi ...	... To worship (repeat doxologies).
ပူဇော်တော်မူသည် ...	... Pu-zaw daw mu thi	... To make an offering, worship.
လျှောက်တော်မူသည် ...	... Hlyauk daw mu thi	... To speak to a *pôngyi*.
တရားနာတော်မူသည် ...	... Ta-yā na daw mu thi ...	... To listen to a sermon.
စာကြည့်တော်မူသည် ...	... Sā kyi daw mu thi	... To read a book (to himself).
စာဖတ်တော်မူသည် ...	... Sa hpat daw mu thi	... To read aloud.
စာသင်တော်မူသည် ...	... Sa thin daw mu thi	... To learn.
စာချတော်မူသည် ...	... Sa hkya daw mu thi	... To teach.
စာရေးတော်မူသည် ...	... Sa ye daw mu thi	... To write.
ကျောင်းဆောက်တော်မူသည် ...	... Kyaung sauk daw mu thi ...	... To found a monastery.
ဝယ်တော်မူသည် ...	... Wè daw mu thi	... To buy.
ပွဲကြည့်တော်မူသည် ...	... Pwè kyi daw mu thi	... To witness a *pwè*.
ပွဲခံတော်မူသည် ...	... Pwè hkan daw mu thi ...	... To order a *pwè*.
မြင်း။ခြေတော်တင်သည် ...	... Myin hkyi daw tin thi ...	... To ride a pony.
ဆင်။ခြေတော်တင်သည် ...	... Sin hkyi daw tin thi	... To ride an elephant.
ရထားတော်။ခြေတော်တင်သည် ...	... Yet-ta-daw hkyi daw tin thi ...	... To drive in a carriage.
သင်္ဘောတော်။ခြေတော်တင်သည်	... Them-baw-daw hkyi daw tin thi...	... To embark in a ship.
လှေတော်။ခြေတော်တင်သည် ...	... Hle-daw hkyi daw tin thi ...	... To embark in a boat.
ဆင်သိမ်းတော်မူသည် ...	... Sin thein daw mu thi ...	... To take (possession of) an elephant.
မြင်းသိမ်းတော်မူသည် ...	... Myin thein daw mu thi ...	... To take (possession of) a pony.
ဆေးလိပ်တော်သောက်တော်မူသည်	... Se-leik-daw thauk daw mu thi ...	... To smoke a cigar.
ရေကစားတော်မူသည် ...	... Ye ka-sa daw mu thi ...	... To sport in, or with water.
စာပူဇော်တော်မူသည် ...	... Sa pu-zaw daw mu thi ...	... To buy religious writings.
စတုဒိသာကျွေးတော်မူသည် ...	... Sadutitha chwe daw mu thi ...	... To feed all-comers, as a religious act.
ခမည်းတော်ကိုဆက်တော်မူသည်	... Hkamè-daw go set daw mu thi ...	... To present to (his or her father).
မယ်တော်ကိုတင်တော်မူသည် ...	... Mè-daw go tin daw mu thi ...	... To speak to (his or her) mother.

Spoken by the King, Queen, Princes, and Princesses among themselves—concluded.

ပုံထုတ်တော်မူသည် ...	... Pôn htôp daw mu thi ...	... To take a likeness.
ခစားသည် ...	... Hka-sa-thi	... To attend, wait upon.
သံတော်ဦးတင်သည် ...	... Than-daw u tin thi	... To speak, petition.
တင်သည် ...	... Tin thi	... *Ibid.*
ဆက်သည် ...	... Set thi	... To present, offer.
နောက်တော်လိုက်သည် ...	... Nauk daw laik thi	... To follow, accompany.
အိပ်ဖန်စောင့်သည် ...	... Eik-hpan saung thi	... To take turn in attendance at night.
အလှည့်စောင့်သည် ...	... A hlè saung thi	... To wait upon by turn.
ပွဲတော်လိုက်သည် ...	... Pwè-daw laik thi	... To attend while eating.
သောက်တော်ရေလိုက်သည် ...	... Thauk-daw ye laik thi ...	... To attend with water to drink.
လက်ဆေးတော်ရေလိုက်သည် ...	... Let se daw ye laik thi ...	... To attend with water for the hands.
သကြြန်တော်ရေလိုက်သည် ...	... Thi(n)-gyan daw ye laik thi ...	... To attend with water for washing the head.
မျက်နှာသစ်တော်ရေလိုက်သည် ...	... Myet-hna thit daw ye laik thi ...	... To wait with water for washing the face.
ချိုးတော်ရေလိုက်သည် ...	... Chyo daw ye laik thi ...	... To attend while bathing.
အနှိပ်တော်ဆက်သည် ...	... A-hneit daw set thi	... To shampoo.
ရပ်တောင်တော်ခပ်။ဆက်သည် ...	... Yat-taung-daw hkat set thi ...	... To fan.
ဒေါင်းတောင်တော်ခပ်။ဆက်သည် ...	... Daung daung-daw hkat set thi ...	... To fan with peacock's tail feathers.
ဘိနပ်တော်ခင်းသည် ...	... Bi-nat-daw hkin thi	... To lay out the sandals.
အေးယည့်တော်ကျူးသည် ...	... E-yin-daw kyu thi	... To rock the royal cradle.
ပွဲတော်ဆက်သည် ...	... Pwè-daw set thi	... To serve food.
သောက်တော်ရေဆက်သည် ...	... Thauk-daw ye set thi ...	... To offer drinking water.
ဆေးလိပ်တော်ဆက်သည် ...	... Se-leik-daw set thi	... To give a cigar.
ဝတ်လဲတော်ဆက်သည် ...	... Wut-lè-daw set thi	... To give clothing.
သံတော်ဦးတင်လွှာဆက်သည် ...	... Than-daw-u tin hlwa set thi ...	... To present a petition.
တင်လွှာဆက်သည် ...	... Tin-hlwa set thi	... *Ibid.*
စားတော်ကွမ်းဆက်သည် ...	... Sa-daw kun set thi	... To give betel.

စားတော်လဘက်ဆက်သည် ...	... Sa-daw la hpet set thi ...	... To give *letpet*, or salad tea.
ပွဲတော်ဆေးဆက်သည် ...	... Pwè-daw-se set thi	... To give medicine.
လက်ဆောင်တော်ဆက်သည် ...	.... Let-saung-daw set thi ...	... To offer presents.
ငွေတော်ဆက်သည်	... Ngwe-daw set thi	... To pay revenue.
အခွန်တော်ဆက်သည်	... A-hkun-daw set thi	... *Ibid.*
လူပျိုတော်ဆက်သည် ...	... Lu-byo-daw set thi	... To give a boy as page.
အပျိုတော်ဆက်သည် ...	... A-pyo-daw set thi	... To present a girl as maid-of-honour.
မိန်းမစိုးဆက်သည်	... Meim-ma-so set thi	... To present a eunuch.

Form of address to the King and Chief Queen.

ဘုရားကျွန်တော်—ရွှေဘဝါးတော်မြတ်အောက်ရှိခိုး သံတော်ဦးတင်ပါသည်ဘုရား။	Hpaya kyun-daw—shwe hpawa-daw myat auk shi-hko than-daw-u tin ba thi hpaya.	I, your Majesty's servant, *shihko* and petition beneath your golden feet.

Form of address to the Crown Prince, Queens, Princes and Princesses.

ဘုရား ကျွန်တော်—ရှိခိုး သံတော်ဦး တင်ပါ သည် ဘုရား။	Hpaya kyun-daw—shi-hko than-daw-u tin ba thi hpaya.	Your servant, doing reverence, represents to Your Highness.

Form of address to Ministers and Officials.

ဘုရားကျွန်တော်—ရှိခိုး အစီရင်တော်ခံပါသည် ဘုရား။	Hpaya kyun-daw—shi-hko a-si-yin daw hkan ba thi hpaya	Your servant represents for your orders.

Forms of conversation with the King and Chief Queen.

ဘုရား အမိန့်တော်မြတ်ကို။ ဦးထိပ်ထက် ဆင်ရွက်ပါသည်ဘုရား။	Hpaya a-mein-daw-myat go u teit htet sin ywet ba thi hpaya.	I receive (*Lit.*, carry on my head) Your Majesty's order with profound respect according to Your Majesty's order (*Bya-hteit* is a divine communication).
ဘုရားဗြာထိပ်တော်မြတ်အတိုင်းပါဘုရား	.... Hpaya bya-hteit-daw-myat a-taing ba hpaya.	
ဦးထိပ်ရွက်ပါသည်ဘုရား	.... U-hteit ywet ba thi hpaya	Yes Sire (*Cf.* the "As Your Lordship pleases," of the Bar).
ဗြာထိပ်တော်မြတ်အတိုင်းပါဘုရား	... Bya-hteit-daw-myat a-taing ba hpaya ...	
ရှိခိုးသံတော်ဦးတင်ပါသည်ဘုရား	.... Shi-hko-than-daw-u tin ba thi hpaya ...	
တင်ပါသည်ဘုရား	.... Tin ba thi hpaya	
ဘယ်ကိုထွက်တော်မူမတုံးပါဘုရား	.... Bè go htwet-daw-mu madôn ba hpaya	... Where is Your Majesty going (out) to?

Forms of conversation with the King and Chief Queen—continued.

ဘာလုပ်တော်မူနေတုံးပါဘုရား ...	... Ba lōp-daw mu ne dôn ba hpaya	... What is Your Majesty doing ?
ဘာအမိန့်တော်ရှိတော်မူသည်လဲပါဘုရား	.... Ba a-mein-daw shi-daw-mu thi lè ba hpya ...	What did Your Majesty say ?
စက်တော်ခေါ်တော်မူတော့မလားပါဘုရား	... Set-daw hkaw-daw-mu daw ma la ba hpaya	Would Your Majesty sleep ?
အပါးတော်မှာ။ခစားချင်ပါသည်ဘုရား	... A-pa-daw hma hkasā gyin ba thi hpaya ...	I would like to attend on Your Majesty.
အသက်တော်ဘယ်လောက်ရှိတော်မူဘီတုံးပါဘုရား	A-thet-daw bet-lauk shi-daw-mu bi dôn ba hpaya	How old are you ?
ဘာဝတ်လဲတော်ဆင်တော်မူမတုံးပါဘုရား	.... Ba wut-lè-daw sin-daw-mu ma dōn ba hpaya	What dress will you wear ?
ဘယ်မှာပွဲတော်တည်တော်မူမလဲပါဘုရား	... Bè-hma pwè-daw tè-daw mu ma-lè ba hpaya	Where will you eat your meal ?
ဆေးလိပ်တော်ဆက်ရမလားပါဘုရား	... Se-leik-daw set ya ma-la ba hpaya ...	Shall I give you a cigar ?
ဘယ်ကခစားရမတုံးပါဘုရား ...	... Bè-ga hkasā ya ma dôn ba hpaya ...	From what place shall I attend on you ?
မနေ့ညက စက်တော်ခေါ်လို့ ပျော်တော်မူရဲ့ လားပါ ဘုရား။	Ma-ne nya ga set-daw hkaw lo pyaw-daw-mu yè la ba hpaya	Did you sleep well last night ?
ဘယ်အဆောင်တော်မှာစံတော်မူမလဲပါဘုရား	.... Bè a-saung-daw hma san-daw-mu ma-lè ba hpaya	In which chamber will you stay ?
နောက်တော်လိုက်ပါမည်ဘုရား	... Nauk-daw laik-ba-mi hpaya ...	... Please let me follow you.
စိတ်မဆိုးတော်မူပါနှင့်ဘုရား	.... Seik ma so-daw-mu baw hnin hpaya ...	Pray do not be angry.
မမုံးတော်မူပါနှင့်ဘုရား ...	.... Ma môn-daw-mu ba hnin hpaya... ...	Please do not dislike me.
ဘယ်သူကိုချစ်တော်မူသည်တုံးပါဘုရား	... Bè thu go hkyit-daw-mu thi dōn ba hpaya ...	Whom do you regard favourably ?
ဘုရားကျွန်တော် သည်မှာရှိပါသည်ဘုရား	... Hpaya kyun-daw thi-hma shi ba thi hpaya...	I am here.
ဘုရားကျွန်တော်ကိုခိုင်းတော်မူပါဘုရား	.... Hpaya kyun daw go hkaing-daw-mu-ba hpaya	Please send me.
ဘုန်းတော်ကြီးဘုရားအမိန့်တော်ပါဘုရား	.... Hpôn-daw-gyi hpaya a-mein-daw ba hpaya	*Le roi le veult.*
နန်းမတော် ဘုရားက အဆက် ခိုင်းတော် မူလိုက်ပါ သည်ဘုရား။	Nan-ma-daw hpaya ga a-set hkaing-daw-mu laik ba thi hpaya.	The Chief Queen sends me to present you.
ဘုရားကျွန်မအလှည့်ကျပါသည်ဘုရား	.... Hpa ya kyun-ma a-hlè kya ba thi hpaya ...	It is my turn as woman-in-waiting.
ဘုရားကျွန်မ။မသိရဘောင်ပါဘုရား	... Hpaya kyun-ma ma thi ya hpaung ba hpaya	Your handmaiden did not know.
ဘုရားကျွန်မကိုသနားတော်မူသည်လားပါဘုရား	.... Hpaya kyun-ma go thana-daw thi la ba hpaya	Did you give your handmaiden this ?

ဘုရားကျွန်မနောက်တော်လိုက်ပါမည်ဘုရား	... Hpaya kyun-ma nauk-daw laik ba mi hpaya	Your handmaiden will follow you.
ဘုရားကျွန်တော်မတင် ဝံ့ဘောင်ပါဘုရား	... Hpaya kyun-daw ma tin wun hpaung ba hpaya	I dared not represent.
ခမည်းတော်ဘုရားနတ်ပြည်စံတော်မူပါပြီဘုရား	... Hka-mè-daw hpaya nat-pyi san-daw-mu ba bi hpaya	His Majesty, your father, is dead.
ယခုချက်ချင်းကံတော်ကုန်ပါသည်ဘုရား	... Ya-hku chet-chin kan-daw kôn ba thi hpaya ...	He is just dead.
စိတ်ဆိုးတော်မူမှာအလွန်ကြောက်ပါသည်ဘုရား	... Seit-so daw-mu-hma a-hlôn kyauk ba thi hpaya	I greatly dread your anger.
အပြစ်တော်တင်မှာအလွန်စိုးရိမ်ပါသည်ဘုရား	... A-pyit-daw tin hma a-hlōn so-yein ba thi hpaya	I greatly fear you will blame me.
စိတ်ချလိုစံတော်မူပါဘုရား ...	... Seik-hkya lo san-daw-mu ba hpaya	... May your mind be at ease.
စိုးရိမ်တော်မမူပါနှင့်ဘုရား ...	... So-yein-daw ma mu ba hnin hpaya	... Pray do not trouble.
ကြောင့်ကြစရာမရှိဘောင်ပါဘုရား	.... Kyaung kya-se-ya ma shi hpaung ba hpaya	There is nothing to be concerned about.
မဆက်ဝံ့ဘောင်ပါဘုရား	.... Ma set wun hpaung ba hpaya ...	... I am afraid to present it.
ဘယ်မှာထိုင်တော်မူမလဲပါဘုရား	... Be-hma taing dau-mu ma lè ba hpaya	... Where will you be seated?
ဘာဖြစ်လို့မှိုင်တော်မူနေသည်လဲပါဘုရား	... Ba hpyit-lo hmaing daw-mu ne thi lè ba hpaya	Why are you downcast?
အိုက်တော်မူသည်လားပါဘုရား	... Aik daw mu thi la ba hpaya ...	... Do you feel it close?
ဥပုသ်တော်ယူတော်မူသည်လားပါဘုရား	... U-pōt daw yu-daw-mu thi la ba hpaya	... Are you keeping (religious) fast?
ပါများအလိုရှိတော်မူသည်လဲပါဘုရား	.... Ba-mya a-lo shi-daw-mu thi lè ba hpaya	... What do you wish?
စိတ်တိုင်းကျတော်မူရဲ့လားပါဘုရား	... Seit-taing-kya daw-mu yè la ba hpaya	... Are you satisfied?
အပြစ်မပေးတော်မူရင်တင်ပါမည်ဘုရား	.... A-pyit ma pe-daw-mu yin tin ba mi hpaya	... I will tell you, if I am not punished for it.
သည့်လိုမဟုတ်ရဘောင်ပါဘုရား	... Thi-lo ma hōt ya hpaung ba hpaya	... It is not so.
မပြောရဘောင်ပါဘုရား	.... Ma pyaw ya hpaung ba hpaya ...	... I did not say that.
မတင်ရဘောင်ပါဘုရား ...	.... Ma tin ya hpaung ba hpaya ...	... That was not what I said.
15 မယူရဘောင်ပါဘုရား ...	... Ma yu ya hpaung ba hpaya ...	... I did not take.
ချိုးတော်ရေသုံးတော်မူတော့မလားပါဘုရား	... Hkyo-daw-ye thōn-daw-mu daw ma la ba hpaya	Will you bathe?
ခစားရတာပျော်ပါသည်ဘုရား	... Hka-sā ya tè pyaw ba thi hpaya	... It is a pleasure to serve you.

Forms of conversation with the King and Chief Queen—continued.

ဘာမျှမလုပ်ပေါင်ပါဘုရား	.... Ba-hmya ma lôp paung ba hpaya	... I am doing nothing.
ခစားနေပါသည်ဘုရား	.... Hka-sā ne ba thi hpaya ...	... I am in attendance.
ချမ်းသာပေးတော်မူပါဘုရား ...	.... Hkyan-tha pe daw-mu ba hpaya	... Pray pardon.
စိတ်ပူတော်မူသည်လားပါဘုရား	... Seik pu-daw-mu thi la ba hpaya	... Are you grieved?
စိတ်တော်မချမ်းသာတော်မူဘူးလားပါဘုရား	... Seik-daw ma hkyan-tha daw-mu bu la ba hpaya.	Are you not pleased?
သစ္စာပြုတော်မူပါဘုရား	... Thissa pyu-daw-mu ba hpaya ...	... Graciously promise.
သစ္စာထိန်းတော်မူပါဘုရား ...	.... Thissa tein-daw-mu ba hpaya ...	... Graciously keep your promise.
ထွက်တော်မူပါဘုရား	... Htwet daw-mu-ba hpaya ...	... Deign to go out.
ဝင်တော်မူပါဘုရား ...	.... Win daw-mu-ba hpaya ...	... Be pleased to go in.
စက်တော်ခေါ်တော်မူပါဘုရား	... Set-daw hkaw-daw-mu ba hpaya	... Be pleased to go to sleep.
ပွဲတော်ဘယ်တော်မူပါဘုရား	... Pwè-daw tè-daw-mu ba hpaya ...	... *Monsieur est servi.*
သင်္ကြန်တော်ခေါ်တော်မူပါဘုရား	.. Thin-gyan-daw hkaw-daw-mu ba hpaya	... Condescend to wash your head.
မနက်ပွဲတော်ကျရင်ထွက်တော်မူပါဘုရား	.... Ma-net pwè-daw kya yin htwet-daw-mu ba hpaya	Vouchsafe to go out after breakfast.
နေ့ပွဲတော်မတယ်ခင်ရေးတော်မူပါဘုရား	.... Ne pwè-daw ma tè hkin ye daw-mu ba hpaya	I pray you to write before lunch.
ညပွဲတော်မိန်မိန်တယ်တော်မူပါဘုရား	.... Nya pwè-daw mein-mein tè-daw-mu ba hpaya	Good appetite attend your dinner.
ဥယျာဉ်တော်မှာ ဘယ်လောက်တာရှည်စံတော်မူမလဲပါ ဘုရား။	U-yin-daw hma bet-lauk ta-she san daw mu ma lè ba hpaya	How long will you choose to stay in the garden?
ဘာပွဲတော်တယ်တော်မူမလဲပါဘုရား	.... Ba pwè-daw tè-daw-mu ma lè ba hpaya	... What will you please to eat?
ယူတော်မူမလားပါဘုရား	.... Yu-daw-mu ma la ba hpaya ...	... Will you accept it?
ကြိုက်တော်မူသည်လားပါဘုရား	... Kyaik-daw-mu thi la ba hpaya ...	... Is it pleasing to you?
မြတ်နိုးတော်မူသည်လားပါဘုရား	... Myat-no-daw-mu thi la ba hpaya	... Do you esteem me?
ချစ်တော်မူသည်လားပါဘုရား ...	... Chit-daw-mu thi la ba hpaya ...	... Have you affection for me?
ပွဲတော်ကျသနားတော်မူပါဘုရား	... Pwè-daw-kya thana-daw-mu ba hpaya	... May I eat what you have left?
ရောက်တော်မူဘီလားပါဘုရား	.... Yauk-daw-mu bi la ba hpaya ...	... Has Your Royal Highness arrived?
ဘာစဉ်းစားတော်မူသည်တုံးပါဘုရား	.... Ba sin-sa-daw-mu thi dôn ba hpaya	... Of what are you thinking?

ဆရာတော်ဘုရားကမေတ္တာစာသွင်းပါသည်ဘုရား	Saya-daw hpaya ga myitta sa thwin ba thi hpaya ...	The abbot has sent a letter.
အကျိုးတော်ဖြစ်အောင်လုပ်ပါသည်ဘုရား	A-kyo-daw hpit aung lôp ba thi hpaya ...	I am labouring for your advantage.
အမိန့်တော်ရှိသည်အတိုင်းပြောလိုက်ပါဘီဘုရား	Mein-daw shi thi a-taing pyaw laik ba bi hpaya ...	I replied as you ordered.
ဘာဝေတော်မူနေသည်လဲပါဘုရား	Ba we-daw-mu ne thi lè ba hpaya ...	What are you distributing.
ဘာသနားတော်မူမယ်လို့လဲပါဘုရား	Ba thana-daw-mu mè lo lè ba hpaya ...	What will you grant?
ပွဲတော်လိုက်ရမလားပါဘုရား	Pwè-daw laik ya ma la ba hpaya ...	Shall I attend at the royal meal?
ဆံတော်ရှင်းဆက်ရမလားပါဘုရား ...	San-daw shin set ya ma la ba hpaya ...	Shall I comb your hair?
ဆံတော်ရှင်းတော်မူတော့မလားပါဘုရား	San-daw shin-daw-mu daw ma la ba hpaya	Are you going to comb your hair?
သင်္ကြန်တော်ခေါ်မူတော့မလားပါဘုရား ...	Thin-gyan-daw hkaw-mu-daw ma la ba hpaya	Are you going to wash your hair?
လက်တော်မှာပါကိုင်တော်မူနေသည်လဲပါဘုရား ...	Let-daw hma ba kaing daw mu ne thi lè ba hpaya ...	What are you holding in your hands?
သနားတော်မူပါဘုရား	Thana-daw-mu ba hpaya ...	Please give me.
ဘယ်သူကိုခေါ်တော်မူသည်လဲပါဘုရား ...	Bè-thu go hkaw-daw mu thi lè ba hpaya	Whom do you summon?
မေးတော်မူသည်လားပါဘုရား	Me-daw-mu thi la ba hpaya ...	Did you enquire?
ဘယ်မှာထားတော်မူသည်လဲပါဘုရား ...	Bè-hma hta-daw-mu thi lè ba hpaya ...	Where did you place it?
ပွဲတော်ဆာတော်မူသည်လားပါဘုရား	Pwè-daw sa-daw-mu thi la ba hpaya ...	Are you hungry?
ကိုယ်တိုင်တော်ထွက်တော်မူမလားပါဘုရား	Ko-daing-daw htwet-daw-mu la ba hpaya ...	Are you going out in person?
တပါးထည်းထွက်တော်မူမလားပါဘုရား ...	Ta-ba-dè htwet-daw-mu ma la ba hpaya ...	Are you going out alone?
ဘယ်သူများနောက်တော်လိုက်ရမလဲပါဘုရား	Bè-thu-mya nauk-daw laik ya ma lè ba hpaya	Who is to attend you?
အလိုတော်ရှိရာလုပ်တော်မူပါဘုရား ...	A-lo-daw shiya lôp-daw-mu thi la ba hpaya...	As Your Majesty desires.
သည်လိုထင်တော်မူသည်လားပါဘုရား ...	Thi-lo tin-daw-mu thi la ba hpaya ...	Do you think so?
ဘယ်နှယ်ထင်တော်မူသည်တုံးပါဘုရား	Bè-hnè tin-daw-mu thi dôn ba hpaya ...	How do you think?
ဘယ်နှယ်ကြံတော်မူမည်တုံးပါဘုရား	Bè-hnè kyan-daw-mu mi dôn ba hpaya ...	How do you propose?
ဓါတ်ပုံထုတ်တော်မူမည်လားပါဘုရား ...	Dat-pôn htôp-daw-mu mi la ba hpaya ...	Will you be photographed?
အကြံသနားတော်မူပါဘုရား	A-kyan tha-na-daw-mu ba hpaya ...	Graciously advise me.
ထိပ်လန့်တော်မူသည်လားပါဘုရား ...	Hteip-lan-daw-mu thi la ba hpaya ...	Are you alarmed?

Forms of conversation with the King and Chief Queen—concluded.

ယုံကြည်တော်မူရဲ့လားပါဘုရား	.... Yōn-kyi-daw-mu yè la ba hpaya	... Do you believe it ?
အရှင်အလွန်ဝတော်မူပါသည်ဘုရား	.... A-shin a-hlōn wa-daw-mu ba thi hpaya	... Your Highness is very stout.
အရှင်အင်မတန်ပိန်တော်မူပါသည်ဘုရား	.... A-shin ingma-tan pein-daw-mu ba thi hpaya	Your Majesty is painfully thin.
အရှင်အသားတော်အလွန်ကြည်ပါသည်ဘုရား	.... A-shin a-tha daw a-hlōn kyi ba thi hpaya	... Your complexion is very clear.
အရှင်မျက်နှာတော်ကိုအင်မတန်ဘူးလိုပါသည်ဘုရား	A-shin-myet-hna-daw go ing-ma-tan hpu lo ba thi hpaya	I rejoice to gaze on the royal face.
ရွှေမျက်နှာတော်အလွန်ကြည်တော်မူပါသည်ဘုရား	Shwe myet-hna-daw a-hlōn kyi-daw-mu ba thi hpaya	Your golden face is very bright.
အသံတော်အလွန်သာပါသည်ဘုရား	... A-than-daw a-hlōn thā ba thi hpaya	... The royal voice is very sweet.
အဝေးအရေးရှိများ ရွှေဘဝါးတော်အောက်သို့ရောက်ပါပြီဘုရား။	A-we a-ya-shi-mya shwe ba-wa-daw auk tho yauk ba thi hpaya, ...	The district officers have arrived at the royal feet (in the capital).
မှူးတော်မတ်တော်များ ညီလာခံအခစားရောက်ပါပြီဘုရား။	Hu-daw mat-daw mya nyi-la-hkan a hka sā yauk ba bi hpaya	The Ministers have come to attend the audience.

Language of courtiers speaking with each other about Royalty.

ဘုန်းတော်ကြီးဘုရားဘယ်မှာစံတော်မူသည်လဲ	.... Hpōn-daw-gyi hpaya bè-hma san-daw-mu thi lè	Where is the King now living ?
အဆောင်တော်ထဲမှာစံတော်မူသည်	.... A-saung-daw dè-hma san-daw-mu thi	... He is in his apartments.
တပါးတည်းလားနှစ်ပါးလား	.... Ta-ba-dè la hnit-ba la ...	... Is he alone, or is Her Majesty with him ?
တပါးတည်းစံတော်မူသည်	.... Ta-ba-dè san-daw-mu thi ...	... He is alone.
နှစ်ပါးစံတော်မူသည်	.... Hnit-ba san-daw-mu thi ...	... The Queen is with him.
အပါးတော်မှာဘယ်သူရှိသည်လဲ	.... A-pa-daw hma bè-thu shi thi lè ...	... Who is in the presence ?
နန်းမတော်ဘုရားရှိတော်မူသည်	.... Nam-ma-daw hpaya shi-daw-mu thi	... The Chief Queen is there.
ဘယ်သူများခစားနေကြသည်လဲ	.... Bè-thu-mya hka-sā ne kya thi lè	... Who is in attendance ?
မိဘုရားများခစားနေကြသည်	.... Mi-hpaya-mya hka-sā ne kya thi	... The queens are in attendance.
ဘုန်းတော်ကြီးဘုရားဘယ်မှာရှိတော်မူသည်လဲ	.... Hpōn-daw-gyi hpaya bè-hma shi-daw-mu thi lè	Where is the King ?
ညီလာခံကိုထွက်တော်မူသည်	.... Nyi-la-hkan go htwet-daw-mu thi	... He has gone to the Audience Hall.
ဘယ်တော့ကိုဝင်တော်မူလိမ့်မလဲ	.... Bè-daw go win-daw mu leim-ma lè	... When will he come back ?

ညီလာခံကွဲချင်ဝင်တော်မူလိမ့်မည်	Nyi-la-hkan kwè yin win-daw-mu leim-mi	He will come after the audience is over.
ညီလာခံမှာဘယ်အရာရှိများခစားသည်လဲ	Nni-la-hkan hma bè a-ya-yi mya kha-sā thi-lè.	What officials are in attendance at the audience?
ညီလာခံမှာဘာအမိန့်တော်ရှိသည်လဲ	Nyi-la-hkan hma ba a-mein-daw shi thi lè	What did the King say at the levée?
ဘယ်သူကိုမေးတော်မူသည်လဲ	Bè-thu go me daw mu thi lè	Whom did he question?
ဘယ်သူကိုခေါ်တော်မူသည်လဲ	Bè-thu go hkaw-daw-mu thi lè	Whom did he summon?
ဘယ်အဆောင်မှာပွဲတော်တည်လိမ့်မလဲ	Bè a-saung hma pwè-daw-tè leim-ma lè	In which room will he eat?
တောင်နန်းတော်မှာပွဲတော်တည်လိမ့်မည်	Taung nan-daw hma pwè-daw tè leim-mi	He will eat in the Southern Palace.
ဘုန်းတော်ကြီးဘုရားဘာဖြစ်တော်မူသည်တုံး	Hpōn-daw-gyi hpaya ba hpyit-daw-ma mu thi dōn.	What is the matter with His Majesty?
မမာတော်မူ၍ထွက်တော်မမူနိုင်ဘူး	Ma mā-daw-mu ywe htwet-daw-ma-mu hn-aing bu.	He is ill and cannot come out.
ဘယ်နှယ်ရှိတော်မူပါသည်တုံး	Bet-hnè shi-daw-mu ba thi dōn	How is he now?
သက်သာတော်မူပါပြီ	Thet-thā-daw-mu ba bī	He is better.
မသက်သာတော်မူသေးဘူး	Ma thet thā daw mu the bu	He is not better yet.
ရောဂါတော်တိုးသည်	Yawga-daw to thi	He is worse.
ရောဂါတော်ဆုတ်သည်	Yaw-ga-daw sōt thi	He is recovering.
ဘယ်တော့မှပျောက်တော်မူလိမ့်မလဲ	Bè-daw hma pyauk-daw-mu leim-ma lè	When will he be restored to health?
ဘယ်သမားတော်ဆေးကိုပွဲတော်တည်သည်လဲ	Bè tha-ma-daw se go pwè-daw tè thi lè	Which doctor's medicine is he taking?
အိပ်ရာတော်ထဲကထတော်မူနိုင်ရဲ့လား	Eik-ya-daw dè-ga hta-daw-mu hnaing yè la	Can he rise from his bed?
မလှဲ့တော်မူနိုင်ဘူး	Ma hlè-daw-mu hnaing bu	He cannot turn.
စကားပြောတော်မူနိုင်ရဲ့လား	Sa-gā pyaw-daw-mu hlaing yè la	Can he speak?
မင်းသားများရှေ့တော်မှာခစားနေသည်လား	Min-tha-mya she-daw hma hka-sā ne thi la	Are the princes in attendance?
အားလုံးသမီးတော်များအပါးတော်မှာရှိကြသည်	A lōn tha-mi-daw-mya a-pa-daw hma shi gya thi.	The princesses are all with him.
ရှေ့တော်မှာဝပ်လို့ခစားနေတာဘယ်သူတုံး	She-daw hma wut-lo hka-sā ne-da bè-thu dōn	What officials are kneeling in the presence?
ဥယျာဉ်တော်ကိုဘယ်တော့ဆင်းတော်မူလိမ့်မတုံး	U-yin-daw go bè-daw sin-daw-mu leim-ma dôn.	When will he go to the garden?
ဥယျာဉ်တော်ကတက်တော်မူလာပြီ	U-yin-daw ga tet-daw-mu la bi	He has returned from the garden.

Language of courtiers speaking with each other about Royalty—continued.

စက်တော်ခေါ်လို့ပျော်တော်မူရဲ့လား	.... Set-daw-hkaw lo pyaw-daw-mu yè la	... Does he sleep soundly?
တညလုံးစက်တော်ခေါ်လို့မပျော်တော်မူဘူး	.... Ta-nya-lōn set-daw-hkaw lo ma pyaw-daw-mu bu.	He did not sleep the whole night through
ရှေ့တော်မှာစကားမပြောပါနှင့်	.... She-daw hma sa-gā ma pyaw ba hnin	... Do not speak in the royal presence.
ခေါင်းရင်းတော်မှာမထားပါနှင့်	.... Hkaung-yin-daw hma ma hta ba hnin	... Do not place it near his head.
ခြေရင်းတော်မှာမထိုင်ပါနှင့်	.... Che-yin-daw hma ma htaing ba hnin	... Do not place it near his feet.
အပါးတော်မှာပါရှိသည်လဲ	.... A-pā-daw hma ba shi thi lè ...	... What is there near him?
တင်လွှာဆက်လိုက်ပါ	.... Tin-hlwa set laik ba ...	... Present this petition.
စက်တော်မခေါ်ခင်တင်လိုက်ပါ	.... Set-daw ma hkaw gin tin laik ba	... Present it before he goes to sleep.
နိုးတော်မူရင်ဆက်လိုက်ပါ	.... No-daw-mu yin set laik ba ...	... Present it as he awakes.
ချိုးတော်ရေကျရင်ပွဲတော်တည်လိမ့်မည်	.... Cho-daw ye kya-yin pwè-daw tè leim-mi	... He will eat after bathing.
သိတော်မူရင်စိတ်ဆိုးတော်မူလိမ့်မည်	.... Thi-daw-mu yin seit so-daw-mu leim-mi	... He will be angry if he knows.
မသိတော်မူပါစေနှင့်	.... Ma thi-daw-mu ba se hnin ...	... Do not let him know.
မမြင်တော်မူပါစေနှင့်	.... Ma myin-daw-mu ba se hnin ...	... Do not let him see it.
နားထောင်တော်မူနေသည်လား	.... Na htaung-daw-mu ne thi la ...	... Is he listening?
နားထောင်တော်မူနေသည်	.... Na htaung-daw-mu ne thi ...	... He is listening.
မြင်တော်မူလိမ့်မလား	.... Myin-daw-mu leim-ma la ...	... Will he see it?
ကြည့်တော်မူနေသည်	.... Kyi-daw-mu ne thi	... He is looking.
လက်တော်မှာဘာကိုင်တော်မူနေသည်လဲ	.... Let-daw hma ba kaing-daw mu ne thi lè	... What is he holding in his hands?
တင်လွှာကိုင်တော်မူသည်	.... Tin-hlwa kaing-daw mu thi ...	... He is holding a petition.
စာရေးတော်မူနေသည်	.... Sa ye-daw-mu ne thi ...	... He is writing.
ညီလာခံမှာဘယ်သူကိုအရာသနားတော်မူသည်လဲ	Nyi-la-hkan hma bè-thu go ayā thanā-daw-mu thi lè.	To whom did he give an appointment at the audience?
ဘယ်သူကိုအမိန့်တော်မှတ်တော်မူသည်လဲ	.... Bè-thu go a-mein-daw hmat-daw-mu thi lè ...	Whom has he appointed?
မှူးတော်မတ်တော်များကိုဘာအမိန့်တော်ရှိသည့်လဲ	Hmu-daw mat-daw-mya go ba a-mein daw shi thi lè.	What orders did he give to the officials?
အပျိုတော်ဘယ်နှစ်ယောက်အလှည့်စောင့်သည်တုံး	A-pyo-daw bè-hnit-yauk a-hlè saung thi dōn	How many maids-of-honour are in waiting?

ပွဲတော်လိုက်သည့်သမီးတော်များရောက်ကြသီလား	Pwè-daw laik-thi thami-daw-mya yauk-kya thi la.	Have the princesses to wait at table arrived?
ဝတ်လဲတော်များကိုဘယ်သူဆက်သည်လဲ	.... Wut-lè-daw-mya go bè thu set thi lè	... Who gave him his robes?
ကိုယ်တိုင်တော်ဆင်တော်မူသည်လား	... Ko-daing-daw sin-daw-mu thi la	... Did he dress himself?
သည်ဝတ်လဲတော်နှင့်။တယ်လိုက်တော်မူသည်	... Thi wut-lè-daw hnin tè laik-daw-mu thi	... This dress suits him well.
ရှုတော်မူရန်ပန်းဆက်သည်လား	.... Shu-daw-mu yan pan set thi la ...	... Have you given him the flowers to smell?
ရွှေမျက်နှာတော်ကိုဖူးရခဲ့လား	... Shwe myet-hna-daw go hpu ya yè la	... Have you seen him?
ရွှေလက်တော်ရောက်ဆက်လိုက်ပါ	.... Shwe let-daw yauk set laik ba ...	... Place it in his hands.
လက်တော်ကိုရောက်ပီလား	... Let-daw go yauk bi la ...	... Has it reached his hands?
လက်တော်မှာရှိသည်	.... Let-daw hma shi thi ...	... It is in his hands?
လက်တော်နှင့်ကိုင်၍သနားတော်မူသည်	.... Let-daw hnin kaing-yue thana-daw-mu thi	... He gave it with his own hands.
တန်းဆာတော်ဆင်၍ထွက်တော်မူလာသည်	.... Ta-za-daw sin-yue htwet-daw-mu la thi	... He came out in full royal robes.
တယ်ရင်တော်မူသည်	.... Tè yin daw muthi	... He is very graceful.
တယ်လှတော်မူသည်	... Tè-hla-daw mu thi	... He is very handsome.
မေးတော်မူရင်တင်လိုက်ပါ	.... Me-daw-mu yin tin laik ba ...	... Represent it, if he asks.
ရှိခိုးသံတော်ဦးတင်ပီးပီလား	.... Shi-hko than-daw-u tin-pi bi la ...	... Have you represented it?
မြင်းခင်းကိုထွက်တော်မူလိမ့်မလား	... Myin-hkin go htwet-daw-mu leim-ma la	... Will he go to the pony races?
လှေပွဲမှာပါဆုသနားတော်မူသလဲ	.... Hle-pwè hma ba su thana-daw mu tha lè	... What did he give at the boat races?
ဘုန်းတော်ကြီးဘုရား ကိုယ်တိုင် တော် ထွက်တော်မူ လိမ့်မည်လား။	Hpōn-daw-gyi hpaya ko-daing-daw htwet-daw-mu leim-ma la.	Does the King go out in person?
နန်းမတော်ဘုရားလဲအတူလိုက်တော်မူလိမ့်မည်	.... Nam-ma-daw hpaya lè a-tu laik-daw-mu leim-mi.	The Chief Queen will go with him.
မိဘုရားများလဲနောက်တော်လိုက်ရလိမ့်မည်	.... Mi-hpaya-mya lè nauk-daw laik ya leim-mi...	The queens will go in their train.
သမီးတော်ဘယ်နှစ်ပါးခစားနေသည်လဲ	... Tha-mi-daw bè-hnit ba hka-sā ne thi lè	... How many princesses are in attendance?
ခြေတော်အလွန်အေးသည် ...	.... Hkye-daw a-hlōn ē thi ...	... His feet are very cold.
အခန်းတော်ထဲမှာစာကြည့်တော်မူနေသည်	.... A-hkan-daw dè-hma sa kyi-daw-mu ne thi	... He is reading in his apartments.
ဥပုသ်တော်ယူသည်လား	.... U-pōt-daw yu thi la	... Is he keeping the fast?

Language of courtiers speaking with each other about Royalty—concluded.

သင်္ကြန်တော်ခေါ်လိမ့်မလား	.... Thin gyan daw hkaw leim ma la	... Is he going to wash his head ?
မျက်နှာသစ်တော်ရေကျပြီလား ...	.... Myet hna thit daw ye kya bi la ...	... Has he washed his face ?
ဘာလုပ်တော်မူနေသည်လဲ	... Ba lōp daw mu ne thi lè ...	... What is he doing ?
ဆံတော်ရှင်းတော်မူသည် ...	.... San daw shin daw mu thi ...	... He is combing his hair.
ဘယ်သူဆံတော်ရှင်းသည်လဲ	.... Bè thu san daw sin thi lè ...	... Who is combing his hair ?
နန်းမတော်ဘုရားရှင်းတော်မူသည်	... Nam ma daw hpaya shin daw mu thi	... The Chief Queen combs it.
ဆံတော်ကိုဘယ်သူများကိုင်ရသည်လဲ	... San daw go bè thu mya kaing ya thi lè	... Who may touch his hair ?
ဆံတော်ကိုဘယ်သူမျှမကိုင်ရဘူး	.... San daw go bè thu hmya ma kaing ya bu	... No one may touch the royal hair.
နန်းမတော်ဘုရားတပါးသာကိုင်တော်မူရသည်	.... Nam ma daw hpaya ta ba thā kaing daw mu ya thi.	None but the Chief Queen may touch it.

The Royal relatives.

ဘေးတော် ...	... Be-daw	... Great grand-father or great grand-mother.
ဘိုးတော် ...	... Bo-daw	... Grand-father.
ဘွားတော် ...	... Bwa-daw	... Grand-mother.
ခမည်းတော်	... Hkamè-daw	... Father.
မယ်တော် ...	.... Mè-daw	... Mother.
သားတော် ...	... Tha-daw	... Son.
သမီးတော် ...	... Tha-mi-daw	... Daughter.
မြေးတော် ...	.... Mye-daw	... Grand-son or grand-daughter.
မြစ်တော်	.... Myit-daw	... Great grand-son or great grand-daughter.
နောင်တော် ...	... Naung-daw	... Elder brother of a brother.
ညီတော် ...	.... Nyi-daw	... Younger brother.
မောင်တော်	... Maung-daw	... Brother of a sister.
အစ်မတော် ...	.... It-ma-daw	... Elder sister.

ညီမတော်	Nyi-ma-daw	Younger sister of a sister.
နှမတော်	Hnit-ma-daw	Younger sister of a brother.
ဘကြီးတော်	Ba-gyi-daw	Uncle : father's elder brother.
ဝရီးတော်	Wa-yi-daw	Uncle : mother's brother.
ဘထွေးတော်	Ba-dwe-daw	Uncle : father's younger brother.
အရီးတော်	A-yi-daw	Aunt : father's sister.
မိထွေးတော်	Mi-dwe-daw	Mother's younger sister.
မိကြီးတော်	Mi-gyi-daw	Mother's elder sister.
တူတော်	Tu-daw	Nephew.
တူမတော်	Tu-ma-daw	Niece.
ယောက်ခမတော်	Yauk-ḥka-ma-daw	Father or mother-in-law.
ယောက်ဖတော်	Yauk-hpa-daw	Brother-in-law.
ယောင်းမတော်	Yaung-ma-daw	Sister-in-law.
ခဲအိုတော်	Hkè-o-daw	Brother-in-law : husband's elder brother.
မရီးတော်	Ma-yi-daw	Sister-in-law : wife's elder sister.
မတ်တော်	Mat-daw	Brother-in-law : husband's younger brother.
ခယ်မတော်	Hkè-ma-daw	Sister-in-law : wife's younger sister.
ဆွေတော်မျိုးတော်	Swe-daw myo-daw	Royal relations.

Royal Personages and Court Officials.

ရှင်ဘုရင်	Shin-bu-yin	The King.
ဘုန်းတော်ကြီးလှသောဘုရား	Hpōn-daw-gyi hla-thaw hpaya	The King.
ရွှေနန်းရှင်ဘုရား	Shwe nan-shin hpaya	The King.
ဧကရာဇ်မင်းမြတ်	Èkayit min myat	The King.
တကာတော်ဧကရာဇ်မင်းမြတ်	Ta-ga-daw èkayit min myat	The King, addressed by a *pōngyi*.
တကာတော်ရေမြေရှင်	Ta-ga-daw ye mye shin	The King, addressed by a *pōngyi*.

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Royal Personages and Court Officials—concluded.

မိဖုရား	Mi-hpa-ya	The Chief Queen; (the others were designated by their particular titles).
နန်းမတော်မိဖုရားခေါင်ကြီးဘုရား	Nam-ma-daw mi-hpaya hkaung-gyi hpaya	
တောင်နန်းမတော်မိဖုရားခေါင်ကြီး	Taung nam-ma daw mi-hpaya hkaung-gyi	
အရှင်နန်းမတော်ဘုရား	A-shin nam-ma-daw hpaya	
နန်းမတော်ဘုရား	Nam-ma-daw hpaya	
တကာတော်မ	Ta-ga-daw ma	The Chief Queen, when spoken to by a *pôngyi*.
အိမ်ရှေ့မင်း	Eing-she min	The Crown Prince (when an heir was designated).
အိမ်ရှေ့ဘုရား	Eing-she hpaya	
အိမ်ရှေ့ထိပ်ထား	Eing-she hteik-hta	The Crown Princess.
အိမ်ရှေ့ထိပ်ထားဘုရား	Eing-she hteik hta-hpaya	
မင်းသား	Min-tha	A Prince, in general.
ရွှေကိုယ်တော်ကြီးဘုရား	Shwe ko-daw-gyi hpaya	A prince, born of the pure blood royal.
ရွှေကိုယ်တော်မြတ်ဘုရား	Shwe ko-daw-myat hpaya	
ကိုယ်တော်ကြီးဘုရား	Ko-daw-gyi hpaya	A prince, born of a minor queen.
ကိုယ်တော်ကြီး	Ko-daw-gyi	
မင်းသမီး	Min-tha-mi	A princess, in general.
ထိပ်စုဘုရား	Hteik su-hpaya	A princess, of the pure blood royal.
စုဘုရား	Su-hpaya	
ထိပ်ခေါင်တင်ဘုရား	Hteik hkaung-tin hpaya	A princess, born of a minor queen.
ထိပ်ခေါင်တင်	Hteik hkaung-tin	
ထိပ်ထားဘုရား	Hteik hta hpaya	A married princess.
ထိပ်ထား	Hteik hta	
ထိပ်တင်	Hteik-tin	Sons and daughters of the Princes by morganatic alliances.
တင်တင်	Tin tin	
ကိုယ်လုပ်တော်	Ko-lôk-daw	A concubine.
မောင်းမမိဿံ	Maung-ma meit-than	

ည်ကြည်တော်	A-kyi-daw	A royal friend, used by the King in speaking of, or writing to, another sovereign.
မှူးတော်မတ်တော်	Hmu-daw mat-daw	Ministers and officials.
မှူးကတော်။မတ်ကတော်	Mu-kadaw mat-kadaw	Their wives.
အပျိုတော်	A-pyo-daw	A maid-of-honour.
မှန်နန်းအပျိုတော်	Hman-nan a-pyo-daw	A maid-of-honour, specially attached to service of the King.
သမီးကညာ	Tha-mi ka-nya	A maid-of-honour, daughters of Shan *Sawbwas.*
လူပျိုတော်	Lu-byo-daw	A page, gentleman-at-arms.
အထိန်းတော်	A-htein-daw	A royal wet-nurse.
အရတော်	A-ya-daw	A nursery maid.
အချီတော်	A-hkyi-daw	A male attendant, to carry the child.
ဆရာတော်	Sayā-daw	A royal teacher.
သမားတော်	Thamā-daw	A royal doctor.
ဖွါးဘက်တော်	Hpwa-bet-daw	One born at the same time.
ဆံတော်ရှင်း	San-daw-shin	A royal hair-dresser.
အချုပ်တော်	A-chôk-daw	A royal tailor.
အထောက်တော်	A-htauk-daw	A palace detective, or informer.
အလှည့်သား	A-hlè-daw	A royal attendant, taking his regular turn.
ဘဏ္ဍာသား	Banda-tha	Keeper of the royal jewel-room and treasury.
ဝတ်လဲတော်သား	Wut-lè-daw-tha	Master of the robes.
ကွမ်းခမ်းသား	Kun-hkan-tha	Custodian of the betel.
အနှိပ်တော်	A-hneit-daw	Royal shampooer.
ဆတ်တာတော်	Satta-daw	Royal barber.
စားတော်ကဲ	Sa-daw-kè	The royal cook.
ပွဲတော်သား	Pwè-daw-tha	Employès in the royal kitchens.

Royal paraphernalia.

သရဖူတော်	Tha ya-hpu-daw	The crown.
မကိုဋ်တော်	Ma-gait-daw	
ဦးကပ်တော်	U-kat-daw	
ဗေါင်းတော်	Baung-daw	A turban.
ဝတ်လဲတော်	Wut-lè-daw	State robes.
ဝတ်လဲတော်အင်္ကျီ	Wut-lè-daw in-gyi	A jacket or gaberdine.
ဝတ်လဲတော်ပုဆိုး	Wut-lè-daw pu-so	A *paso* or waistcloth.
ဝတ်လဲတော်ထမိန်	Wut-lè-daw hta-mein	A skirt or petticoat.
တံဆာတော်	Ta za-daw	The royal insignia.
ချိုတော်ပဝါ	Hkyo-daw pa-wa	A neckkerchief or mantilla.
ချိုတော်စောင်	Hkyo-daw saung	A shawl.
လက်ကိုင်တော်ပဝါ	Let-kaing-daw pawa	A handkerchief.
မျက်နှာသုတ်တော်ပဝါ	Myet-hna thôt-daw pawa	A towel.
လက်သုတ်တော်ပဝါ	Let-thôt-daw pawa	A napkin.
အိပ်ရာခင်းတော်	Eip-ya hkin-daw	A bed-sheet.
အိပ်ရာတော်	Eip-ya-daw	A bed.
အုံးတော်	Ôn-daw	A pillow.
မှီးအုံးတော်	Hmi ôn-daw	A pillow to lean against.
လက်ထောက်တော်	Let-htauk-daw	A square, flat pillow to lean the elbow on.
နေရာတော်	Ne-ya-daw	A cushion.
နေရာပါးတော်	Ne-ya-pa-daw	A cushion, soft and yielding, of delicate texture.
ချင်ရန်တော်	Hkyin-yan-daw	A curtain.
စံလွန်တော်	Sa'-lun-daw	A bedstead.
ညောင်စောင်းတော်	Nyaung zaung daw	A bedstead or couch.
ဧယဉ်တော်	È-yin-daw	A cradle.
ပုခက်တော်	Pa-hkat-daw	
သင်ဇာလီတော်	Thin-za-li-daw	A bed-frame (without legs).

မှန်တင်တော်	Hman-tin-daw	A looking-glass with stand.
ဘီးတင်တော်	Bi-tin-daw	A comb-tray.
ဘီးအစ်တော်	Bi-it-daw	A powder-box.
လိမ်းတော်သနတ်ခါး	Lein-daw thana' kha	*Thanakha* (fragrant powder).
လိမ်းတော်ဆီ	Lein-daw si	Toilet oil.
တို့ဖတ်တော်	To-hpat-daw	A powder puff.
စလွယ်တော်	Sa-lwè-daw	The collar of the order of the *Salwè*, a gold chain set with gems.
ခါးစည်းတော်	Hka-si-daw	A belt.
လည်ကပ်တော်	Lè-kap-daw	} A necklace.
ပုတီးတော်	Pa-ti-daw	
နားတောင်းတော်	Na-taung-daw	Ear-cylinders.
နားပံတော်	Na-pan-daw	Ear-cylinders, a sort of amulet.
လက်ဝတ်တော်	Let-wut-daw	A bracelet (flat).
လက်ကောက်တော်	Let-kauk-daw	A bangle.
လက်စွပ်တော်	Let-sut-daw	A ring.
ရာဇပလ္လင်တော်	Yaza-pallin-daw	The royal throne.
ထီးဖြူတော်	Hti-hpyu-daw	A white umbrella.
ရမားတော်	Ya-ma-daw	A punkah, a suspended fan.
မင်းခမ်းတော်	Min-hkam-daw	Ornaments.
ဟင်းသာကွမ်းအုပ်တော်	Hin-tha kun-ôk-daw	A large betel-box in the shape of a Brahminy duck.
ကလဝိတ်ကွမ်းအုပ်တော်	Kalaweik kun-ôk-daw	A large betel-box in the shape of a *Karaweik* (the *garuda* or carrying bird of Vishnu).
ကျိုင်းတော်	Kyaing-daw	An official umbrella, carried before (not over) the owner.
သိုင်းတော်	Thaing-daw	A rod carried before food or water, a ceremonial wand.
အလံတော်	A-lan-daw	A flag.

Royal paraphernalia—continued.

သံလျက်တော်	Than-hlyet-daw	The royal sceptre.
သားမြီးရပ်တော်	Tha-mi yat-daw	A fly flap.
ခြေနင်းတော်	Hkye-nin daw	A sandal.
သေတ္တာတော်	Theitta-daw	A coffer.
လှေကားတော်	Hle-ka-daw	Staircase or steps.
ဗဟိုသ်စင်	Ba-ho-sin	The tower on which the time-drum and bell were mounted.
နန်းမြင့်	Nan-myin	A lofty tower near the palace.
မျက်နှာကြက်တော်	Myet-hna kyet-daw	A canopy.
ပွဲကြည့်ဆောင်တော်	Pwè-kyi saung-daw	A box for the play.
ဇာတ်ရုံတော်	Zat yôn-daw	The stage.
ထီးဖြူရုံတော်	Hti-hpyu yôn-daw	A large shed in the form of a white umbrella.
ဆင်ကတော်	(Sin) ka-daw	A howdah.
မင်းရုပ်ထုတော်	Min-yôk-htu-daw	A royal statuette.
ကြာကြည်တော်	Kya-kyi-daw	A screen.
မြင်းကတော်	(Myin) ka-daw	A saddle.
ကွမ်းခန်းတော်	Kun-hkan-daw	The room where the betel was prepared for use.
ဘီးတော်	Bi-daw	A comb.
ဆံထိုးတော်	San-to-daw	A hair-pin.
ရပ်တောင်တော်	Yat-taung-daw	A fan.
ဒေါင်းတောင်တော်	Daung-daung-daw	A fan of peacock's tail feathers.
ပန်တော်ပန်း	Pan-daw-pan	Flowers.
ဘိနပ်တော်	Bi-nat-daw	Shoes.
လက်သုံးတော်ဓား	Let-thôn-daw dha	A sword.
လက်သုံးတော်လှံ	Let-thôn-daw hlan	A spear.
လက်သုံးတော်သေနတ်	Let-thôn-daw thenat	A gun.

သောက်တော်ဖလား	Thauk-daw hpala	A goblet.
သောက်တော်ရေတင်ကလပ်	Thauk-daw ye-tin ka-lat	A salver on which to present it.
သောက်တော်တခေါင်း	Thauk-daw ta-gaung	A goglet or jug.
ဒေါင်းဘောင်တော်	Daung-baung-daw	A salver used for plates.
ပွဲတော်ကလပ်	Pwè-daw ka-lat	A salver used for sweetmeat.
ပွဲတော်အုပ်	Pwè-daw ôk	A dish, with a conical cover, for food.
ပွဲတော်ပုဂံ	Pwè-daw pagan	A bowl or plate.
ပွဲတော်ဇွန်း	Pwè-daw zun	A spoon.
ပွဲတော်ထမင်း	Pwè-daw htamin	Cooked rice.
ပွဲတော်ဟင်း	Pwè-daw hin	Stewed meat, or curry.
မနက်ပွဲတော်	Manet pwè-daw	Breakfast.
နေ့ပွဲတော်	Ne pwè-daw	} Lunch.
နေ့အချိုပွဲတော်	(Ne) a-cho pwè-daw	
ညပွဲတော်	Nya pwè-daw	Dinner.
ညအချိုပွဲတော်	(Nya) a-cho pwè-daw	Supper.
လက်ဆေးတော်ဖလား	Let-se-daw hpa la	A finger glass.
လက်ပွတ်တော်ကလပ်	Let-put-daw kalat	A soap dish.
လက်ဆေးတော်ခံ	Let-se-daw hkan	A basin into which the finger glass was emptied.
စားတော်ကွမ်းအစ်တော်	Sā-daw kun-it-daw	A betel box.
ထွေးခံတော်	Htwe-hkan-daw	A spittoon.
မျက်နှာသစ်တော်ဖလား	Myet-hna thit-daw hpala	A bowl, or basin for washing the face.
မျက်နှာသစ်တော်ခံ	Myet-hna thit-daw hkan	A bowl, or basin into which the water was emptied after being used.
မျက်နှာသစ်တော်ကလပ်	Myet-hna thit-daw kalat	A soap-dish or salver.
စတေးတော်	Sa-te-daw	A cup or small bowl.
စားတော်ကွမ်းရာ	Sā-daw kun-ya	Everything required for betel-chewing: nut, leaf, lime, tobacco, cardamons, cutch, &c.

Royal paraphernalia—continued.

ပွဲတော်လဘက် ...	....Pwè-daw la-hpet	... Salad or pickled tea.
ဆေးပွဲတော်	....Se pwè-daw	... Medicine.
သောက်တော်ရေ ...	....Thauk-daw-ye	... } Drinking water.
ရေကြည်တော်	...Ye-kyi-daw	...
မျက်နှာသစ်တော်ရေ ...	....Myet-hna thit-daw-ye ...	... Water to wash the face.
သင်္ကြန်တော်ရေ ...	....Thin-gyan-daw-ye	... Water to wash the head.
ချိုးတော်ရေ	...Cho-daw-ye	... Bathing water.
လက်ဆေးတော်ရေ	...Let-se-daw-ye	... Water to wash the hands.
ဝေါတော်	...Waw-daw	... A State palanquin.
ပြာသာဒ်ရထားတော်	....Pya-that ya-hta-daw	... A carriage with a spire over it.
ပြာသာဒ်ယာဉ်တော်	...Pya-that yin-daw	... A State litter with a spire over it.
ယာဉ်တော်	....Yin-daw	... A State litter or sedan chair.
သင်္ဘောတော် ...	... Thinbaw-daw	... A royal vessel.
သမ္ဗန်တော် ...	....Than-ban-daw	... A ship's boat.
လှေတော်	....Hle-daw	... A row-boat.
ဖေါင်တော်	....Hpaung-daw	... A barge.
စီးတော်ဆင် ...	...Si daw sin	... The royal riding elephant.
စီးတော်မြင်း ...	....Si-daw-myin	... The royal riding pony.
မြို့ ...	...Myo	... The royal city.
ရွှေမြို့တော်	...Shwe myo-daw	... The royal city. (*Lit*. the golden city).
နန်းတော်	...Nan-daw	... The palace.
မြေနန်း	....Mye-nan	... The palace (*Lit*., the earth-palace).
မှန်နန်းတော် ...	....Hman nan-daw	... The crystal palace, or reception chamber.
ရွှေနန်းတော် ...	...Shwe nan-daw	... The golden palace, or reception chamber.
နံ့သာနန်းတော်	...Nan-tha nan-daw	... The sandalwood palace, or reception chamber.

တောင်နန်းတော်	Taung nan-daw	The southern palace, or reception chamber.
သင်္ကြန်နန်းတော်	Thin-gyan nan-daw	A temporary palace in which the King washed his head.
တဲနန်းတော်	Tè nan-daw	A temporary palace for any purpose.
စံနန်းတော်	San nan-daw	
ဖေါင်းတောင်ဆောင်	Baung-taung-saung	The chamber where the royal crowns were kept.
လေသာဆောင်	Le-tha saung	The airy chamber, open all round.
ပရိတ်နာဆောင်	Pa-yeit na-saung	The praying chamber, or chapel.
ဇေတဝန်ဆောင်	Zeta wun saung	The chamber of victory.
ဗြဲတိုက်ဆောင်	Byè-taik saung	The page's antechamber.
ရွှေတိုက်	Shwe taik	The treasury.
ပွဲတက်ဆောင်တော်	Pwè-tet saung-daw	The western hall, frequently used as the dining hall.
အနောက်စမုတ်ဆောင်	A-nauk sa-mut saung	
မြောက်စမုတ်ဆောင်	Myauk sa-mūt saung	The northern room.
တောင်စမုတ်ဆောင်	Taung sa-mūt saung	The southern room.
လက်ဖက်ရေဆောင်	La-hpet ye saung	The tea room.
ထားဝယ်ဆောင်	Dha-wè saung	A wing of the palace at one time occupied by people from Tavoy.
စနုဆောင်	Sa-nu saung	An apartment used for certain prayers.
အဆောင်တော်	A-saung-daw	A royal apartment.
အခန်းတော်	A-hkan-daw	A bed-room.
စက်တော်ခေါ်ခန်း	Set-daw-hkaw hkan	
ဆံတော်ရှင်းခန်း	San-daw-shin hkan	A dressing-room (*Lit.*, hair-combing room).
ဝတ်လဲတော်ခန်း	Wut-le-daw hkan	
ပွဲတော်ခန်း	Pwè-daw hkan	The room where meals were prepared.
အချိုခန်း	A-cho hkan	
ပဏ္ဍာခန်း	Ba(n)da hkan	A store room.

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Royal paraphernalia—concluded.

ချိုးတော်ရေခန်း ...	... Cho-daw ye hkan	... A bath-room.
အိမ်သာတော် ...	... Eing-tha-daw	... A water closet.
ပွဲကြည့်ဆောင် ...	... Pwè-kyi saung	... A room to see plays from.
အိမ်ရှေ့တော် ...	... Eing-she-daw	... The Crown Prince's room.
အိမ်တော် ...	... Eing-daw	... A Prince's palace.
အိမ်ဖြူတော် ...	... Eing-hpyu-daw	... The King's mother's house.
ဥယဉ်တော် ...	... U-yin-daw	... A royal garden.
တပင်တိုင်နန်း ...	... Ta-pin-daing nan	... A special palace for the King's favourite daughter, or the daughter kept to marry the next sovereign.
ပင်တိုင်ဆောင် ...	... Pin-daing saung	...
ပွဲတော်အိမ် ...	... Pwè-daw eing	... The royal kitchen.
ပွဲတော်ဖို ...	... Pwè-daw hpo	...
ကျည်းပြာသာဒ်တော် ...	... Kyi pya-that-daw	... A particular apartment in the crystal palace, in which the King slept for seven days on ascending the throne.
ထွက်စည်တော် ...	... Htwet si-daw	... A large drum beaten when the King left the palace.
ဝင်စည်တော် ...	... Win si-daw	... A large drum beaten when the King re-entered the palace.
ဗဟိုရ်စည်တော် ...	... Ba-ho si-daw	... The time-drum sounding the watches day and night.
ဗဟိုရ်ခေါင်းလောင်း ...	... Ba-ho hkaung laung ...	... The time-bells sounding the watches day and night.
မင်္ဂလာစည်တော် ...	... Mingala si-daw	... The auspicious or sacred drum.
မင်္ဂလာငွေမောင်း ...	... Mingala ngwe-maung ...	... The silver gong.
မင်္ဂလာရွှေမောင်း ...	... Mingala shwe-maung ...	... The golden gong.

Ecclesiastical language, used in addressing pôngyis.

ဘယ်ကကြွတော်မူလာသည်လဲပါဘုရား	... Bè-ga kywa-daw-mu thi lè ba hpaya	... Where does Your Reverence come from?
ဘယ်ကိုကြွတော်မူမလဲပါဘုရား	... Bè-go kywa-daw-mu ma lè ba hpaya	... Where is Your Reverence going to?

ပါအလိုရှိတော်မူပါသည်လဲဘုရား	... Ba a-lo shi-daw-mu ba thi lè hpaya	... What do you wish for?
ပါအလှူခံမလို့တုံးပါဘုရား	... Ba a-hlu hkan-ma lo dôn ba hpaya	... What offering would you have?
ဘယ်မှာသတင်းသုံးတော်မူသည်လဲပါဘုရား	.... Bè-hma tha-din thôn daw mu thi le ba hpaya	Where do you live?
ဘယ်မှာသတင်းသုံးမလို့တုံးပါဘုရား	... Bè-hma tha-din thôn-ma lo dôn ba hpaya	... Where are you going to live?
ဝါတော်ဘယ်လောက်ရတော်မူထသလဲပါဘုရား	... Wā-daw bè-lauk ya-daw-mu ba lè ba hpaya	How long have you been a monk? (How many Lents have you?)
ဘယ်ကျောင်းမှာထိုင်တော်မူသည်လဲပါဘုရား	.... Bè-kyaung hma taing-daw-mu thi lè ba hpaya	In what monastery do you live?
ပါဖုံးပေးတော်မူမလဲပါဘုရား	.... Ba hpôn pe daw mu ma lè ba hpaya	... What will you eat?
ဘယ်မှာကျိန်းတော်မူမလဲပါဘုရား	... Bè-hma kyein-daw-mu ma lè ba hpaya	... Where will you sleep?
ရေသပ်ပယ်တော်မူမည်လားပါဘုရား	.... Ye thap-pè-daw-mu mi la ba hpaya	... Are you going to bathe?
နံနက်ဆွမ်းစားကြွတော်မူပါဘုရား	... Ma net sun-sa kywa daw-mu bè hpaya	... Please come to me in the morning for food?
အိမ်ကိုကြွတော်မူပါဘုရား ...	.... Eing go kywa-daw-mu ba hpaya	... Please come to my house?
ဘယ်နှစ်ပါးကြွတော်မူမလဲပါဘုရား	... Bè-hnit-ba kywa-daw-mu ma lè ba hpaya	... How many of Your Reverences are coming?
ဘယ်ကိုယ်တော်ပြန်တော်မူသည်လဲပါဘုရား	... Bè-ko-daw pyan-daw-mu thi lè ba hpaya	... Which *pôngyi* is dead?
ဘယ်တော့ကပြန်တော်မူသည်လဲပါဘုရား	... Bè-daw-ga pyan-daw-mu thi lè ba hpaya	... When did he die?
ဘာအမိန့်ရှိတော်မူသည်လဲပါဘုရား	... Ba a-mein shi-daw-mu thi lè ba hpaya	... What did Your Reverence say?
ဘယ်တော့မေတ္တာရပ်တော်မူမလဲပါဘုရား	... Bè-daw myitta yat-daw-mu ma lè ba hpaya	... When will you ask it?
ဘာကပ်ပိတော်မူမလဲပါဘုရား ...	... Ba kap-pi-daw-mu ma lè ba hpaya	... What wlll you buy?
ဘယ်သူကပ်သည့်ဆွမ်းလဲပါဘုရား	.... Bè-thu kap thi sun lè ba hpaya. ...	... Who offered you the cooked rice?
ဘယ်ကိုယ်တော်လှူသည့်စာလဲပါဘုရား	.... Bè ko-daw hlu thi sā lè ba hpaya	... Which *pôngyi* presented the manuscript.
အသုဘရှုကြွတော်မူပါဘုရား ...	.... A-thu-ba-shu kywa-daw-mu ba hpaya	... Please come to the funeral.
တရားဟောတော်မူပါဘုရား	... Tayā haw-daw mu ba hpaya ...	... Please preach the law.
ရပ်တော်မူပါဘုရား ...	... Yat-daw-mu ba hpaya ...	... Please stop.
ဆွမ်းဖုံးပေးပြီးဘီလားပါဘုရား ...	.... Sun-hpôn-pe pi bi la ba hpaya ...	... Have you had food?
ဆင်းတုတော်ဘယ်လောက်ပူဆော်ရသည်လဲပါဘုရား	Sin tu-daw bek lauk hpu-saw ya thi lè ba hpaya.	How much did you offer (or pay) for the image?
သင်္ကန်းဘယ်လောက်ကပ်ပိရသည်လဲပါဘုရား	... Thin-gan bek-lauk kap pi ya thei lè ba hpaya	How much did you pay for the robe?

Ecclesiastical language, used in addressing pôngyis—concluded

ကိုယ်တော်ဘယ်နှစ်ပါးပင့်ရမတုံးပါဘုရား	.... Ko daw bè hnit ba pin ya ma dôn ba hpaya	How many *pôngyis* shall I invite?
ကိုယ်တော်ကိုအလွန်ကြည်ညိုကြပါသည်ဘုရား	.... Ko daw go a hlōn kyi nyo gya ba thi hpaya	Every one respects you.
အမိန့်ရှိတော်မူပါဘုရား ...	... A mein shi daw mu ba hpaya ...	... Please say, or speak.
ဘာကပ်ရမလဲပါဘုရား ...	.... Ba kap ya ma lè ba hpaya ...	... What shall I offer you?
ဘယ်သူလှူသည့်ကျောင်းလဲပါဘုရား	... Bè thu hlu thi kyaung lè ba hpaya	... Who built the monastery?
ဘာများစီးဖြန်းနေတော်မူသည်လဲပါဘုရား	.... Ba mya si hpyan ne daw mu thi lè ba hpaya	What doxologies are you repeating?
ကြွသည် ...	... Kywa thi	... To go, or come, walk.
ကျိန်းသည် ...	... Kyein thi	... To sleep.
ဖုံးပေးသည် ...	... Hpôn pe thi	... To eat.
ပူဇော်သည် ...	... Pu za whi	... To worship, or buy (a sacred thing).
ကပ်ပီသည် ...	... Kap pi thi	... To buy.
အမိန့်ရှိသည် ...	... A mein shi thi	... To say or speak.
တရားဟောသည် ...	... Tayā haw thi	... To preach in the morning.
ပရိတ်ဟောသည် ...	... Pa yeit haw thi	... To preach in the evening.
စီးဖြန်းသည် ...	... Si hpyan thi	... To repeat certain formulæ or prayers.
ရွတ်သည် ...	... Yut thi	... To recite.
ရွတ်ဖတ်သည် ...	... Yut hpat thi	... To read aloud.
သတင်းသုံးသည် ...	... Thadin thôn thi	... To live, pass time.

ကမ္မဋ္ဌာန်းရှုသည်	Kammahtan shu thi	To meditate on points of dogma.
အသုဘရှုသည်	A-thuba shu-thi	To contemplate and meditate on a corpse.
မေတ္တာရပ်သည်	Myitta yap-thi	To ask verbally, or in writing.
အလှူခံသည်	A-hlu hkan-thi	To ask, or receive, offerings.
အာပတ်သင့်သည်	Ä-bat thin-thi	To commit sin.
အာပတ်ဖြေသည်	Ā-bat hpye-thi	To confess sin.
သင်္ကန်းရုံသည်	Thingan yôn-thi	To wear the yellow robe.
ရေသတ်ပယ်သည်	Ye thap-pè-thi	To battle.
ပြန်တော်မူသည်	Pyan daw-mu-thi	To die.
ကျောင်းထိုင်သည်	Kyaung taing-thi	To live in a *kyaung*.
သတ်ပယ်သည်	That-pè-thi	To be well-looking, seemly.
ကြည်ညိုသည်	Kyi-nyo-thi	To respect.
ပင့်သည်	Pin-thi	To invite.
လျှောက်သည်	Hlyauk-thi	To speak.
ကပ်သည်	Kap-thi	To offer.
လှူသည်	Hlu-thi	To give an offering.
ဖူးသည်	Hpu-thi	To see, or look.
ဆံချသည်	San-hkya-thi	To shave.

The *Sa-lwè* (စလွယ်) was the only approach which the Burmese had to the European orders of knighthood. It was a sort of shoulder-belt formed of chains of gold, fastened in four places, in shields or bosses, and worn over the shoulder like an officer's sash. The number of strings or threads marked the rank in the order, but there were no promotions in the order itself as an order.

The *Sa-lwè*.

The *Sa-lwè* was really part of the robes of office and the rise to a higher grade in the order merely marked that the wearer had gained official promotion.

	Strands.
The king wore a *Sa-lwè* of	24
The Crown Prince of	21
Shan *Sawbwagyis* and Princes of the Blood of	18
Shan *Myosas* and other members of the Royal Family of ...	15
Mu-gyi and *Mat-gyi* (ministers of the higher ranks) of ...	12
Mu-lat and *Mat-lat, Mu-ngè* and *Mat-ngè* (ministers of the lower ranks) of	9 to 3

A minister who had the dignity of *Thet-daw-she* conferred on him wore the *Sa-lwè* of eighteen strands. The *Thet-daw-she* was perhaps rather an immunity than a mere title, for it protected the holder from a number of forms of execution categorically set forth. The only *Mingyi Thet-daw-she* at the time of the annexation was the Kin-wun Mingyi.

The *Sa-lwè* seems to have been founded with some suggestion of the Brahminical cord and there is indeed direct reference to this in the *Sa-lwè-din Sadan*, the Book of the Order, where it is stated that the Brahmins wear a ninefold cord; the Shatriya (or Ketra) a sextuple cord; the Vaisyas (or Bīsa) one of three strands; and the Sudras nothing. The commentary on the *Dipawamsa* and that on the *Pârâjika* make mention of a *Sa-lwè* as having been included among the gifts sent by King Asoka (Thiridhamma Thawka Mintaya) to Devânam Piyatissa, King of Ceylon, in the third century before Christ. The institution of the order is therefore very ancient and no one wore the collar or shoulder-belt until he had attained an age when he could grasp the moral laws and act up to them. The *Sa-lwè-din Sadan* notes that the *Sa-lwè* is mentioned in the commentary on *Vakkalithera-Apâdâna*, and in such Sanskrit works as *Sarodaya*. The *Abhi-dāna-tikâ* says that the object of wearing a *Sa-lwè* is to maintain the purity of character of one's family or caste. The King, the Ministers of State, and the members of the Royal Family wore the *Sa-lwè* not for ornament, but as a symbol of their high character.

The *Dasakammam* and other books say that a new-born child is a Sudra and remains such as long as no *Sa-lwè* is worn. The title



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of *Dvija*, or "twice-born," can only be assumed after the investiture of the *Sa-lwè*.

The Government Translator has furnished the following note :—

"The Burmese word *Sa-lwè* is apparently a corruption of the Hindustani *Janwi* (ဇနွီ။ဇနွယ်။ဇလွယ်။စလွယ်), to the investiture of which so much importance is attached among the Hindus. A Brahman is not entitled to be called a Brahman, or a twice-born, and cannot perform his sacerdotal duties until he has been invested with the sacred thread. The investiture symbolizes his regenerate condition and confirms his status in society. The Burmese kings adopted this ancient Hindu religious custom and turned it into a secular institution for the recognition of merit and service to the State. The Burmese *Sa-lwè* were made of gold and worn in Hindu fashion. A gold *Sa-lwè* of twenty-one cords was presented by King Mindôn to His Royal Highness the Prince of Wales on the occasion of the despatch to England of a Burmese Embassy headed by the Kinwun Mingyi in 1872."

It may be added that a twelve-string *Sa-lwè* was at the same time presented to W. E. Gladstone, who was then Prime Minister.

Titles.

Although the Burmese had no order except that of the *Sa-lwè*, they had a multitude of titles, applicable to every grade in official rank. These are treated of at enormous length in the *Bwè Sadan*, which discusses the proper spelling and the probable derivation with the zeal and industry of an ancient scholiast. Many seem to be derived from the names of notable kings or ministers, others are mere epithets, like the *Bahādur* of India, or the 'gallant officer,' or 'learned gentleman' of the House of Commons. At first their meaning no doubt was preserved, but latterly they were given somewhat indiscriminately, and in a country where every official was thought capable of holding any office and might rise from the lowest to the highest, they at best marked incidents in his career. Some at least, such as *Balit*, seem to have been ironical rather than honorary.

The following extracts from the *Bwè Sadan* will give an idea of the character of that work :—

Min-so (မင်းစိုး), King. Usually written *Min-zaw*.

Min, corresponds in meaning to the following thirteen Pali words :—

(1) Yaza (ရာဇာ).
(2) Bupadi (ဘူပတိ).
(3) Bupalaw (ဘူပလော).
(4) Patti-waw (ပတ္တိဝေါ).
(5) Narathabaw (နရာသဘော).
(6) Bumadaw (ဘူနာဒေါ).
(7) Zagatipalaw (ဇာဂတိပါလော).
(8) Dithampiti (ဒိသမ္ပတိ).
(9) Zanadipaw (ဇာနာဓိပေါ).
(10) Rayadipaw (ရဋ္ဌာဓိပေါ).
(11) Naradewaw (နရဒေဝေါ).
(12) Bumipaw (ဘူမိပေါ).
(13) Busuzaw (ဘူသုဇော).

The *Thaddanidi* (သဒ္ဒနီတိ) says: Whoso possesses reputation and judgment is called Mandat Min (မန္ဓာတ်မင်း), the sovereign of the four great islands.

The *Wazi-ratta-thingaha* (ဝဇီရတ္ထသင်္ဂဟ) says: Whosoever possesses liberality and reputation is called Mandat Min.

The *Deddhawatathan-Pali* (ဒေဒ္ဓဝတ္တသံပါဠိ) says: Reputation is the origin of wealth.

The *Attagata* says: Reputation is the pride of government.

The *Wunna Bawdana* (ဝဏ္ဏဗောဓန) says: Whoso possesses glory and reputation among the multitude is called Maraw-Mara Yaza (မရောမရရာဇာ), the king.

These definitions show that the implication of the word *Min* is reputation, judgment, and glory.

So (စိုး) means the possession and enjoyment of glory and luxuries. Old authors generally refer to the names of the five *nats*-Mektraso (မေဃစိုး), Bômmaso (ဘုမ္မစိုး), Yôkkaso (ရုက္ခစိုး), Akathaso (အာကာသစိုး), and Tharaso (သာရစိုး) when they discuss the meaning of the word *so*. The *Sulawin Kyan* (စူဠဝင်ကျမ်း), the *Kalyani* inscription (ကလျာဏီ), the *Èkekkhara Kawthadika* (ဧကက္ခရကောသဋီကာ), the *Mun Yazawin* (မွန်ရာဇဝင်), and the *Myamma Yazawin-gyi* (မြန်မာရာဇဝင်ကြီး), the histories of the Môn and of the Burmese, say that the name of Nawra-hta Minzaw (နော်ရထာမင်းစော) was formerly Mawra-hta Minso (နော်ရထာမင်းစိုး) and that the *so* was only changed to *saw* in later days.

The *Abidandi-ka* (အဘိဓာန်ဋီကာ) says that those who possess glory and luxuries are called *Dewa* (ဒေဝ); thus *Min Èkarit* (မင်းဧကရာဇ်) are men who are noble and exalted.

Amat (အမတ်) *ministers.*—The *Abidan-kyan* (အဘိဓာန်ကျမ်း) says that *Amats* hold equal responsibility with the *Min* in all matters. The *Min* consults the *amats* in all questions of politics and these latter are called councillors. The meaning of the term *amat* is: one who receives a favour from the *Min-èkarit* and who shares good and evil fortune with him.

Old Burmese records show that the *Amats* were sometimes called *Wun-thazaing* (ဝန်သဆိုင်း) by the *Min*. The *Widuya Zat* (ဝိဓုရဇာတ်) says that the word *amat* means one who guides the *Min* in the administration of the country and is closely connected with him.

Wun (ဝန်) *ministers.*—The *Peda Wuttu Ahtagata* (ပေဒဝတ္ထုအဋ္ဌကထာ) says that the word *wun* implies the administrative responsibility of the State imposed on the *amats*. The King of Baranathi before he entered the Hemawunta forests laid upon the *wuns* and *Amats* the responsibilities of the State. The *Mahawin-kyan Mani-*

gôndala wuttu (မဟာဝင်ကျမ်း။မဏိကုဏ္ဍလဝတ္ထု) says that the *Buddha* before he attained *Nirvana* placed the island of Ceylon in charge of the King of the Thagyas, who subsequently held the Uppalapatta *nat* (ဥပ္ပလဝဏ္ဏနတ်) responsible for it. Thus it appears that a *wun* is one who is responsible for the administration of a State.

In the reign of Mintaya Shwe Hti in the year 902 B. E. (1540 A. D.), when the ruler of Martaban (မုတ္တမမြို့စား) invaded Sawmanya (စောမညား), the admiral of the fleet was appointed *Wun-chôk* or chief *wun* of the army. From that date the rank of *wun* has been divided into 14 grades—

(1) *Mintaingbin Amat*, Councillors.

(2) *Sit-thugyi Bohmu Amat*, Generals.

(3) *Tayathugyi Amat*, Judges.

(4) *Taga-hmu Amat*, Wardens of the City and Palace.

(5) *Koyandaw Amat*, Officers of the Royal Body-guard.

(6) *Letpanthi Amat*, Officers of the Royal Boxers and Wrestlers.

(7) *Minkasā Asaung-mye Amat*, Officers of the Household, in authority over the pages.

(8) *Shwe-hmu* and *Ngwe-hmu Amat*, gold and silver tax-collectors, including the broker at Sangaing (စဉ့်ကိုင်).

(9) *Thugyi*, or *Thugyi-galan Amat*, headmen in charge of single villages.

(10) *Thugyi*, or *Thugyi-galan Amat*, headmen in charge of several villages, including *Than-pyin Thugyi*.

(11) *Thulio* or *Thusho Amat*, Officers in charge of the Royal Spies or secret police.

(12) *Taman Amat*, Officers in charge of the Royal Messengers.

(13) *Ganan-hnya Amat*, Officers in charge of Royal Astrologers.

(14) *Saye Amat*, Officers in charge of the Royal Clerks.

The apparent repetition in the 9th and 10th grades has come down from ancient times and Burman *ex*-officials maintain that it is not a repetition, but quite distinctive.

The inscriptions on various stones set up in the times of the Pagan and Ava Kings show that the titles of *Amat Thugyi-galan* and *Than-pyin Galan* are of ancient creation. The word *Thugyi Thalan* often used is therefore incorrect, *Thugyi-Galan* is the correct form.

Pyanchi (ပျံချီ)

The titles of *Thiri-pyanchi*, *Zeya-pyanchi*, and *Theinka-pyanchi*, &c., were created for presentation to all such as possess great

courage and strength, the ability to rise to the skies, and to enter the stockades of the enemy as hawks stoop on their prey. The *Mahaw Zat* (မဟောသဓာတ်) has a detailed record of such champions. The Burmese *Yazawin* says that in the reign of Pagan Tarôk-pyi Min, in the year 646B.E. (1284A.D.), there were two champions, Randa Pyitsi (ရန္ဒပျစ္စည်း) and Ananta Pyitsi (အနန္တပျစ္စည်း), who ascended to a height of fifteen or sixteen cubits in the air and drove away all enemies.

In the reign of Mingyiswa Sawke in Amarapura and Ava, in the year 754BE., the Mohnyin Shan Army trembled and fled at the sight of *Pyanchi* Nga Shwe of Kèra village. The *Nemi Pyobônkan* has a detailed account of this champion.

The fifth chapter of the *Pagan Yazawin* says that the title of *Pyanchi* was first bestowed in the year 536B.E. (1174A.D.) in the reign of Pagan Narapadi Sithu Mingyi, who had three sons, Yazathu, Pyanchi, and Gingathu, by his queen U Sauk Pan, the sister of Thubarit and the niece of Kala Kyamin's uncle, the king who was dethroned by the foreigners. A digest of the *Dhammathat* of that date has the name of Pagan *Pyan-chi Amat* as its compiler, and the *Attapakarana Linga Thadda Kyan* says that the title of *Pyanchi* was commonly given to officials as a personal distinction.

The title of Thiri Pyanchi was presented to ministers and others who had great courage and strength and the power of flying like birds. *Zeya-pyanchi* was the title given to those who had proved their gallantry in fight, and *Theinka-Pyanchi* specially denoted those who had shown ability and skill in the suppression of dacoits and outlaws.

Welu (ဝေဠု), *Wenu* (ဝေဏု), and *Wuntha* (ဝံသ).

The titles of *Welu Thôndara* (ဝေဠုသုန္ဒရ), *Welu Thara* (ဝေဠုသာရ), *Wuntha Kyawzwa* (ဝံသကျော်စွာ), and the like all refer to the bamboo. The *Wini Kyan* (ဝိနည်းကျမ်း) says that in the time of Gaudama Buddha all writing materials, *parabaiks*, and the like were made from bamboos, and all officials who had distinguished themselves for their literary capacity were awarded these titles. As long as the Burmese Kingdom lasted the custom was observed of supplying every official with twelve *parabaiks* each month. They were issued by the *Shwedaik* and by the various *Wuns* to their subordinates. In old days these *parabaiks* were always made out of bamboo, but later they were manufactured from *nyaung*, a species of *ficus*; from *ôp-hnè*, a *euphorbia*, and from *mahlaing*, the *Broussonetia papyrifera*.

The *Bwè Sadan* gives, as a similar instance of titles corresponding with the occupation, those of *Zala Thingyin* (ဇလသင်္ချိုင်), *Zala-*

Thura Ginga-zeya (သူရဂင်္ဂါဇေယျ), *Ginga-thura* (ဂင်္ဂါသူရ), and the like, which all refer to the Ganges river (ဂင်္ဂါ), and were titles given to those who had rendered services by sea or on the rivers. Besides the reference to the material that officials wrote on, it is recorded that King Narapadi Sithu Mingyi conferred that title of *Welu-wodi* on one of his Queens, who was born of a large bamboo in the forests of the Myinzaing-Wetwin neighbourhood.

Moreover the *Mahā-win Kyan* says the Chief Minister of Dôttakamani Mingyi was Welu Thumana, who bore the title of *Welawzana Padawtatha* (ဝေဠုဇနပဒေါတ္တသ), which means the man of Wadaw-ywa, the bamboo forest village.

Thus, *Welu Thôndara* is the title of a man who has rendered his services on (bamboo) *parabaiks,* and *Welu Thare* and *Welu Thara* correspond in meaning. They signify that the distinction has been gained for ability, steadiness, and application in writer's duties.

Si-tapyit Thwethauk (စည်းတပြစ်သွေးသောက်).

The title *Si-tapyit Thwethauk* is equivalent to *Sanda Pyitsawta Thwethauk* (စန္ဒပဇ္ဇောတ). and was given to commanders of levies which had rendered particular service.

The *Yazawingyi* of Burma gives the following account of its origin,—When Mingyi-swa Sawkè was King of Ratanapura (Ava) and was staying in a temporary palace his head dress accidentally caught on the roof and fell to the ground. The king picked it up and put it on his head as he ascended the throne, holding at the same time a palm-leaf fan in his hand. The Minister Sitapyitgyi said : "The omen is good. Your Majesty will live a long life. "That is shown by your picking up the cap, and the holding of the "fan betokens peace and prosperity to the kingdom." The King was gratified and gave him the title of *Sanda Pyitsawta*, together with a female elephant. The name is preserved in an inscription on a stone in the monastery of Ta-da-u Gingathu, erected by this King in 737B.E. The word *Si-tapyit* is therefore equivalent to *Sanda Pyitsawta* on the analogy of *Razadirit* for *Razadiraza*. The *Dhammapada Atagata* says the King of Uzzeni (ဥဇ္ဇေနီ) bore the title of *Sanda Pyitsawta Min* and was the possessor of five flying chariots. The word *Sanda* in Pāli means moon, and *Pyitsawta* means glory. *Sanda Pyitsawta* and *Sita pyit* (which would be more correctly written *Sidapit* (စည်းဒပိတ်) therefore mean the glory of the moon at the full, and the title is given to wise ministers. A similar title is that of *Thiri Pyitsawta Padi*. *Thiri* in Pāli means reputation ; *pyitsawta*, glory ; and *padi*, possessor. The title was borne in the form *Thare-pitsa-pade* (သရေပဇ္ဇပဒေ) by one of the Generals

of Tarôk-pyi Min, *Nara-thiha-pade Sithu* (စည်သူ). *Sithu* means the possessor of intelligence and courage, and the title was given to those distinguished for these qualities. The corresponding Pāli word is *zeyathura* (ဇေယျသူရ). The wise men of old times thought it improper and ill-omened for a name or a title to end with *r* or *l* (ရ॥လ॥). Thus the Burmese forms—

Minhla Thihathu,
Minhla Sithu,
Shwetaung Sithu,
Yazathu,
Gingathu,
Shwetaung Nandathu,

correspond to the Pali—

Minhla Thiha Thura,
Minhla Zeya Thura,
Sawetaung Zeya Thura,
Razathura,
Ginga Zeya Thura,
Shwetaung Nanda Thura.

The *Hitakari Linga* (ဟိတကာရီလင်္ကာ) says that the wording of a title should always be seemly in characters, pleasant in sound' reasonable in length, and good in omen.

The *Zeyathadda* (ဇေယျသဒ္ဒါ) quotes an inscription on a stone in a monastery erected by Queen Saw Minhla of Pagan in 536 B E. in the reign of Narapadi Sithu Mingyi, where the title *Zayathurati Namatha Theta Razatha Dewiya* (ဇယသူရေတိနာမသ॥သေဋ္ဌရာဇသာဒေဝီယ) occurs; and the inscription on the stone at the Kalayani Their, erected in the reign of Hanthawadi Dhammazedi Min in the year 838 B.E. has the title *Narapadi Zayathu Rawnama Raza* (နရပတိဇယသူရောနာမရာဇာ), referring to the king known as Narapadi Sithu. Moreover the Question of Letwè Nawratta (လက်ဝဲနော်ရထာအမေး) contains the title *Zeyathu Keitti Chatena* (ဇေယသူကိတ္တိချေတေန), which is the Burmese *Sithu Kyawdin*.

Thiha (သီဟ).

Thiha is the Pāli word for a lion. Titles containing the word *Thiha* imply that the bearer has the courage and the steadfastness of the lion. Thus *Maha Thiha Thura* (မဟာသီဟသူရ) was a title borne by almost all members of the Royal Family and by the highest Ministers.

Corresponding words were *Zeya* (ဇေယ) meaning victory, *Nanda* (နန္ဒ) meaning approbation, *Yawda* (ယောဓါ) meaning champion.

Hence the titles *Nanda-yawda*, *Thiha-yawda*, *Maha-yawda*, and so on.

The *Maha Yazawin* says that Dôttakamani Mingyi had ten champions and that the word *yawda* properly means a champion who has the courage of a *pônna* (ပုဏ္ဏာ).

Thuyè (သူရဲ).

Thuyè is contracted from *Thuyè Baw* (သူရဲဘော) meaning courage. An older form was *Thuyèbao* (သူရဲဘဝ်), a variant for which parallels may be found in such words as *Thinganaoki* (သင်္ဃာနဝ်ကိ) = newly inaugurated *rahans*, *Thinganao*, junior *rahans*. Thus also *Theindao* (ထိန္ဒောဝ်) is written for *Theindawa* (ထိန္ဒဝ); *Danao* (ဒါနောဝ်) for *Danawa*; *Kawzao* (ကောဇောဝ်) for *Kawzawa*; *Seikzao* (စိတ်ဇောဝ်) for *Zawana* (ဇဝန); *Nao* for *Nawa*; *Ittibao* for *Ittibawa*; *Ponbao* for *Ponbawa*, and *Attabao* for *Attabawa*.

In ancient days the word *Thuyèbao* was inscribed on gold-leaf and tied on the forehead of distinguished warriors and Ministers of the Crown.

The *Modda Bitheka Depani Sadan* (မုဒ္ဓါဘိသေကဒီပနီစာတမ်း) mentions that Min Nan, the younger brother of the Buddha, had the title given to him and it was bound on his forehead.

The title seems to have come down from the time of Maha Thamada Mandatu, the first king, and from Maha Thudathana (Suddhodana).

Dewi (ဒေဝီ) *and Wadi* (ဝတီ).

These were titles granted to the queens and to the wives of the Shan *Sawbwas*. They were presented on a gold salver. The queens had epithets prefixed as *Sanda-dewi*, *Nanda-dewi*, *Sanda-wadi*, *Maha-wadi*, *Thiha-wadi*, &c. These titles are discussed in the *Thuzapyo* (သူဇာပျို့), a treatise edited by the Mintaya Wungyi, Padetha Yaza, who came to Hanthawadi. The *Thuzapyo* contains many details about the ancient kings and their families and was in common use as a sort of guide to court etiquette. It is particular in prescribing the form of letters patent. Thus the titles of *Thamanta Yaza*, *Letya Wuttanazeya Nandayaza*, *Thiri Wuttana*, *Wuttana Yaza*, and the like given to *Tatmyo Thugyis* and *Ywathugyis* had to be written on palm-leaves pointed at both ends.

Wunna (ဝဏ္ဏ).

The titles of *Wunna Kyawthu*, *Wunna-thu*, *Wunna-thura*, and many more are said to have been given only to those who possessed the six clerical virtues, which were—

Good memory, ability to write a running hand, good penmanship, knowledge, eloquence, shrewdness.

The title of *Wunna Dhamma Kyawdin* was given to all Ministers, *Matgyis*, and *Atwinwuns* who had well-proportioned figures, handsome faces, and an assured reputation.

The titles of *Wunna Mahe* (ဝဏ္ဏမဟေ), *Wunna Wadi*, *Wunna Thiri* were given to the Queens, acknowledged wives, concubines, and maids of honour who had good figures, attractive dispositions, piquant faces, and general personal charms.

The earliest notice is in the *Zatnipad Wuttu* (ဇာတ်နိပါတ်ဝတ္ထု), which states that these titles are given to such ladies as are (*a*) handsome, (*b*) striking, (*c*) charming, and have, broadly speaking, the attractions of a *nat-thami* (a houri) prepared for conquest.

Ôkzana (ဥဇနာ).

The titles of *Maha Ôkzana*, *Thado Ôkzana Mingyi*, &c., are of ancient date and were conferred on Kings, Princes, and other members of the Royal Family. The title appears on the *Kuhnitkyaung Kyauksa* (the seven line inscription) erected in 684—702 B.E. by the ruler of Wizaya-pura, Pinya, which reads as follows :—

" The Ôksana Mingyi, Governor of earth and water, desiring the " furtherance of religion, has erected this stone with seven lines of " inscription as an offering." *Ôkzana* (ဥဇနာ) was formerly spelt and pronounced *Ôksanata* (ဥဿနာထ). The meaning of this was *Ôksa* (ဥဿ)=high personages, *Nata* (နာထ)=dependence. The meaning would seem to be somewhat like the *garib parwas* of India, the protector of the poor, for the *Bwè Sadan* says " In like manner it " may be said that the Almighty God is the *Nata* (refuge) of the " powerful *nats*, the world, elephants, the Mahapeinnè *nat*, and all " the body of the people."

The *Yazawingyi* says that the first person to receive the title of *Ôksama Mingyi* was the son of Kyazwa Mingyi, the Pagan historian. His seal has the title inscribed on it. There are no traces of it in the records of the kingdom of Thare-kettara, Thiri-pitsaya, and Tampawadi. Latterly the title of *Ôkzana* was given to all ministers, *amats*, and *atwinwuns*.

Nawra-hta (နော်ရထာ).

Such titles as *Shwetaung Nawra-hta*, *Minhla Nawra-hta*, *Mingyi Nawra-hta*, were given to all princes who showed capacity for administration.

Nawra-hta, it is said, was formerly spelt and pronounced *Anurôddha* (အနုရုဒ္ဓါ). The *Maha Windika* (မဟာဝင်ဋီကာ) says that the great-grandfather of the Buddha Thiha Hanu Mingyi had two sons, Thôddawdana Mingyi and Thekkawdana Min. The latter had two sons, Maha Nama Min and Anurôddha. The general of Wingamin was also named Anurôddha.

The *Paramatta Wineitsaya Kyan* (ပရမတ္ထဝိနိစ္ဆယကျမ်း) says the word *Anurôddha* means "one possessed of an amiable character" and the *Thanyôk Atagata* (သံယုတ်အဋ္ဌကထာ) says it means one of an even temper and not contentious.

The *Sulawin Kyan Kalyani* inscription and *Ekekkhara Kawthadika* (ဧကက္ခရကောသာဋီကာ) say that in the year 379B.E. (1017A.D.) the King of Pagan assumed the titles of *Anurôddaw Nama Yaza* and *Anurôddaw Dewa Yaza*.

The *Winaya Lingaya* (ဝိနယာလင်္ကာရ) mentions that *Anurôddha*, the King of Arimaddanapura (Pagān), assumed the title of *Mahā Dhamma Yaza* in the year 379B.E.

In the *Mun Yazawin* it is stated that in the reign of Anurôddha Dewa Min at Arimaddanapura some hunters presented Shin Arahan to the King.

The name of the second King of Arimaddanapura was spelt and pronounced Nawra-hta Minsa, as appears in the inscription on a stone erected near a temple in Pagan and quoted by the *Mahā Thila Wuntha Akyaw*.

The *Mahā Mingala Thiha Thanā Yazapalin Ugin Pwin Sadan* (မဟာမင်္ဂလာသီဟာသနရာဇပလ္လင်ဦးကင်ပွင့်စာတမ်း) says that on the 15th waxing of Tagu 941B.E. (April-May 1579) the Hanthawadi Sinbyumyashin Mintayagyi conferred the title of *Nawra-hta*, with the addition of the word *thado* on princes, of *Ôkzana* on ministers and *matgyis*, and of the ordinary words of distinction upon other officials, according to their qualifications and the nature of their services.

Nawra-hta with the word *thado* was considered to be a very high distinction and was instituted in memory of the Tagaung dynasty. The title of *Thuriya Wuntha Nemyo* was instituted in memory of the Pyu Min's umbrella and, with *Nawra-hta* added, specially referred to the great king who began the building of the temples at Pagan.

The Twinthin *Wun*, Mahā Sithu, the author of the new *Yazawin* in his second edition gives another derivation. He says that in the year 345B.E. Nawra-hta came of age and did homage to his elder brother Sukkade (သုက္ကတေး), the King, who thereupon gave him the village of Anuradha to eat, and he was subsequently known as Anawra-hta.

Anurada was one of the nineteen villages built in the year 29B.E. (667 A.D.) by Thamudirit Mingyi. These were—

Nyaung-u.	Nyaungwun.	Taung-wè.
Nagaso.	Anurada.	Myekèdwin.
Nagakyit.	Tasaungkyun.	Thayetya.
Mankyigyi.	Ywamôn.	Singu.
Tudi.	Kyinlo.	Yônhlut.
Kyauksaga.	Kôkko.	Ywaseik.
Kôk-kèthein.		

The *Mahāwin Kyan* and the *Mahā Windika* state that Anurada, who belonged to Ceylon and was *Amatgyi* of King Wizaya Min, built the city of Anurada in the hour of the planet Anura, and add that Anurada means " the accomplishment of good and evil deeds." On the other hand the Twin-thin *Wun*, the author of the new *Yazawin*, says the meaning of the word Nawra-hta cannot be traced.

The inscriptions on the three stones erected by the Queens of the South, North, and Central Palaces of Pagan on Tuesday, the eighth waning of *Pyatho* 379B.E. (January-February 1017A.D.), the *Surawan* year (သုရဝဏ်), contain the words Anurahtā Saw and Anawrahtā Saw.

The interpretation of Nawrahta given by some authors as one renowned in war is quite a modern gloss and has no authority.

Thamu-dirit (သမုဒိရာဇ်).

This is derived from *Thamôt* (သမုတ်), which means to name.

After the destruction of Thare Kettara (သရေခေတ္တရာ) (Prome) the nephew of Thupinnya Nagara Hseinna Mingyi assumed the name of Thamu-dirit. The word is in later days often written Thamôddarit (သမုဒ္ဒရာဇ်), but this is declared incorrect by the best authorities.

Balit-nawra-htā (ဗလစ်နော်ရထာ).—In the reign of Amarapura Mintayagyi the title of Balit-nawra-hta was conferred upon the Anaukwun, Nga Myatya, who was born in 1122B.E. (1760).

The *Teragāta* (ထေရဂါထာ) says the word *balit* means to talk and that the *Anaukwun*, Myat Ya, was a very talkative man. The title *Balit-nawrahta* was inscribed on a sheet of gold and bound round his forehead. This was in the year 1174B.E. (1812), and from that time he was known only by this title.

Thingyan (သင်္ကြန်).—The word *thingyan* means to fight in a battle. The titles *nanda-thingyan*, *zeya-thingyan*, *yaza-thingyan*, and so forth properly denote noted generals.

The Pagān Yazawin says that in the days of King Ôkzana Mingyi and his son Narathihapade (the " King who fled from the Chi-

nese ") there was a famous general in Pagān whose title was *Yaza-thingyan*. He conquered Mitsagiri and died in Dala at the age of sixty-two. He had two sons, Ôkhla-gyi and Ôkhla-ngè, who disputed as to who should have their father's title. The King sent for them and said " *Yaza-thingyan* is a title fit only for great commanders; neither of you shall have it; you shall be called *Nanda-pitsi* (နန္ဒပစ္စည်း) and *Yanda-pitsi* (ရန္ဒပစ္စည်း)".

King Mohnyin Mintaya of Ratanapura (Ava) had three famous generals who were brothers. These were Bayakamani, Yazathingyan, and Yanlokywè. The elder brother won thirty pitched battles and the second thirty-five.

Some authors say the word *yazā-thingyan* should be spelt and pronounced as *Yaza-thankara* (ရာဇသံကရ), which means one who renders good services to the King; some on the other hand say that it should be spelt and pronounced as *Yaza-thinchan* (ရာဇသဉ္ချံ), which means one who figures in the list of officials. There is authority for neither the one nor the other in old records and the theorists may be disregarded.

Saturinga Bo (စတုရင်္ဂဗိုလ်), *Sitturinga Thu* (စစ်တုရင်္ဂသူ).—These are contractions of Satu-Ringa Bala (ဗလ) and Satu Ringa Thura (သူရ) and the names in the later form were borne by the two generals of Tarôkpyi-Min, who invaded Mitsagiri (မစ္ဆဂိရိ).

Saturinga means an army composed of four parts, elephantery, cavalry, charioteers, and foot: a brigade; and *bala* is a noteworthy leader. *Thura* is explained above.

Thena (သေန).—Thena means an army. The titles *Ôkka-thena* (ဥက္ကသေန) *Neinda-thena* (နိန္ဒသေန), *Zaya-thena* (ဇယသေန), *Thena-ka* (သေနက), *Pyanchi-thena* (ပျံချီသေန), *Thena-yaza* (သေနရာဇာ), and many more are therefore properly given to officers who have taken the field on active service.

The title of *Yanda-pitsi* (ရန္ဒပစ္စည်း) derived from *Yanda-pitsaya* (ပစ္စယ) is to be contrasted with *thena*. *Yandha* means ability to prevent war, and *pitsya* means rendering assistance. So that *Yandha-pitsi* is a title proper for a political general, who follows Fabian or other tactics rather than headlong fighting.

Kamani (ကာမဏိ).—The *Abidan Kyan* (အဘိဓါန်ကျမ်း) says the word *Kamani* means a veterinary surgeon; the *Abidan Dika* (ဋီကာ) says it means one who trains elephants and horses; the *Wethandaya Zat Nithaya* (ဝေဿန္တရာဇာတ်နိဿယ) says it means a mahout. *Dôtta-kamani*, on the other hand, is said to mean a violent King, as was Dôtta-kamani or Min-yè Kyawdin, son of Dalasôn Min-yè Kyaw-zaw of Taung-ngu; also Dôtta-kamani Mingyi, who reigned

in Ceylon (Thiho, သီဟိုဠ်) in the year 372 of Religion. *Abaya-kamani* is a title which may be given to an officer who has seen no service. *Zeya-kamani* is a title suitable for a cavalry or elephantery officer who has won an action. *Satu-kamani* is the title given to a brave *amat* who is skilled in military science, a strategist.

Kamani was a title often given to the officers in charge of the royal elephants.

U-dein (ဥဒိန်).—This is an ancient title for those skilled in driving elephants. Thus *U-dein-thiri*, *U-dein-kyawzwa*, *U-dein-kyawgaung*, and the like were titles given to those in charge of the elephants.

The *Dhammapada Atāgata* says that when Queen Kethani of Kawthambi (ကောသမ္ဗီ) was delivered of a son, the Governor of the elephants was named U-tena Yaza, the meeting of the three seasons, the rainy, the cold, and the hot, and that the title of *U-dein Minsaw* dates from that time.

Gaza (ဂဇ).—*Gaza* means the cry of the crane. The titles *Gaza-bala*, *Gaza-thura*, *Gaza-kyawthu*, *Gaza-yawda*, and others were given to those in charge of the elephants.

Turinga (တုရင်္ဂါ).—*Turinga* means a fast walker and is coupled with *gaza*. The titles of *Turin-kyawzwa*, *Turin-yamakyaw*, *Turin-kyawthu*, and so forth were given to officers of cavalry.

Inyi (အင်းသညီ).—*Inyi* means a matchless horse. The titles of *Inyi-turin*, *Inyi-thura*, *Inyi-kyawdin* were especially common in the reign of Mingyizwa Sawkè of Ratanapura (Ava), about 729 B.E., and they were conferred on ministers, *matgyis*, *bos*, and others who had notable horses.

Dwaya (ဒွါရ).—*Dwaya* means a folding door, a gateway with two jambs closing in the middle. Thus the titles *Dwaya-kyawdin*, *Dwaya-dhamma-kyawdin*, *Dwaya-kyawzwa* implied warders to prevent the entrance of suspicious characters. Such titles were given to all *matgyis* and others in charge of gateways.

Linga (လင်္ကာ).—The inscription on the stone erected on the completion of his new palace by King Narapadi in 872 B.E. records the titles of *Thamanta-linga*, *Guna-linga*, *Zeya-linga*, *Aungswa-pitsi*, *Nyana-pitsi*, and *Kônswa* as having been conferred on the carpenters according to their qualifications.

The *Nanti Sadan* of the new palace built by Shinbyushin Mintaya mentions that the title of *Thamanta-linga* was conferred on the chief artificer. It refers particularly to the carved decorations. On the stone near the monastery built by the Queen of Mingyiswa

Sawkè in the year 735 B.E., it is recorded that the carpenter who superintended its erection received the title of *Guna-linga* on account of the richness of the carved work.

Bitthuka (ဗိသုကာ).—The word *bitthuka* is a corrupt form of *withu-kamma* (ဝိသုကမ္မ).

The Hmawgun (မှော်ကွန်း) inscription, written by King Mahā-thila Wuntha Akyaw, says that the word *bit-thuka* means one who has a perfect knowledge of architecture. Similar artificer's titles are *Theikpa-kyawzwa* and *Theikpa-kyawthu* (သိပ္ပကျော်သူ). The latter title is equivalent to *Theikpa-kyawdin* and is not to be taken as being *Theikpa-thura* (*see* above).

Thado (သတိုး).—The *Zawti-tatta Bedin Kyan* (ဇောတိတတ္တဗေဒင်ကျမ်း) says the word *thado* means courage and ability to accomplish. Common forms are *Thado-thiri*, *Thado-ŏksama*, *Thado-dhamma-yaza*, *Thado minsaw*.

The *Abīdan Kyan* defines *thado* as glory, industry, wisdom, and efficiency.

The Pagān Shwe Zigôn inscription, dating from the year 727 B.E. (1365), has the title *Thado Minsawgyi* applied to King Thado Minbya. *Thado Dhamma Yaza* is usually applied only to the greatest kings. It implies that the monarch observed all the laws that it is incumbent on Kings to practise.

The *Yazawingyi* says the title of *thado* was created in memory of the Crown Prince Thado Mingyi of Tagaung, who died in the year twenty of Religion (523 B.C). The name Thado Mingyi also appears as Thado Sintein (ဆင်ထိန်) and Thado Minbya (မင်းဖျား). There are seventeen monarchs who bore it down to the time of Thado Minbya, who built Ratanapura (Ava) in the year 726 B.E. These kings all claimed descent from the Tagaung dynasty.

Nawade (နဝဒေး).—*Nawade* means an innocent person. It was first made use of as a title by Hanthawadi Sinbyushin Mintayagyi in the year 941 B.E. (1578 A.D.), and the first persons to receive it were the Sagaing Htaung-thin Hmu and the Salin Letya *amats*, who are recorded to have obtained it for their energy and intelligence.

Min-yè (မင်းရဲ).—*Min-yè* means bravery, and it was originally a title given only to princes. Common combinations were—

Min-yè Kyawzwa (မင်းရဲကျော်စွာ).

Min-yè Kyawdin (မင်းရဲကျော်ထင်).

Min-yè Rantameik (မင်းရဲရန္တမိတ်).

Min-yè Thiharit (မင်းရဲသီဟရာဇ်).

Aka (အာကာ).—*Aka* means a personage, and the title was first given to the sons of ministers and *amats*. It thus corresponds in a way to the Spanish hidalgo. Common forms were—

Shwe-taung-aka (ရွှေတောင်အာကာ).
Ye-gaung-aka (ရဲခေါင်အာကာ).
Aka-thiha (အာကာသီဟ).

This was especially a page's title. It was granted to the *htidaw*, the pages who carried the golden and white umbrellas of the king; the *dha-daw*, who wore golden swords; the *sa-daw kun-ye*, who served water and betel to His Majesty.

Thinkaya (သင်္ခယာ).—*Thinkaya* means enumeration. Hence the title—

Tharé-thinkaya (သရေသင်္ခယာ) meant a possessor of great glory and large retinue;
Zeya-thinkaya (ဇေယသင်္ခယာ) meant the winner of many victories;
Minhla-thinkaya (မင်းလှသင်္ခယာ) implied a person of polished courtesy;
Mahā-thinkaya (မဟာသင်္ခယာ), an official with a great following.

The title was of quite modern origin.

Naga (နာဂ).—*Naga* means an elephant. Thus a person with the title—

Naga-wuttana (နာဂဝဍ္ဎနာ) implies one who has the strength of a full grown elephant;
Naga-thaman (နာဂသမန်း), one with the courage of an elephant.

Naga was properly a military title. The *Bwè Sadan* says that some writer asserts that it was instituted in memory of the Nagā Princess who provided a guard of 180 dragons to protect her son, Hpyu-min Hti, but authorities are wanting. The word, however, is stated to be very ambiguous and may refer either to the qualities of the elephant or the dragon.

Shwe-taung (ရွှေတောင်).—*Shwe-taung*, literally a golden hill, by implication referred to the golden palace of the King.

Shwe-taung Thiri (ရွှေတောင်သီရိ) and *Shwe-taung Kyawzwa* (ရွှေတောင်ကျော်စွာ) are notables of the golden palace, and so are—

Shwe-taunghla (ရွှေတောင်လှ).
Mintin-shwetaung (မင်းတင်ရွှေတောင်).
Shwe-taung Mintin (ရွှေတောင်မင်းတင်).
Shwe-taung Thara (ရွှေတောင်သာရ).

Shwe-taung Raza (ရွှေတောင်ရာဇာ).
Shwe-taung Bala (ရွှေတောင်ဗလ).

It was a common title among all palace officials.

Raza (ရာဇာ).—The *Thadda Nidi Kyan* and the *Mahā Yazawin* say that *raza* means splendour, glory, and intelligence. Common combinations were—

Patabya Raza (ပထဗျာရာဇာ).
Padetha Raza (ပဒေသရာဇာ).
Manda lika Raza (မဏ္ဍလိကရာဇာ).
Antara-bawgika Raza (အန္တရဘောဂိကရာဇာ).
Ekkha-datha Raza (အက္ခဒသရာဇာ).
Mahā-madda Raza (မဟာမဂ္ဂရာဇာ).
Raza Kulani-thita Raza (ရာဇာကုလနိဿိတရာဇာ).
Thakawiriyanni-thita Raza (သကဝိရိယံနိဿိတရာဇာ).

The *Welama Thôt* says the dynasties of the Setkya Min and the Athawka Min were called by the title of *Padabya Yaza;* the Thiho or Ceylon dynasty by that of *Padetha Yaza.* The Beinbathara and Kawthala dynasties took that of *Manda-lika Yaza.* The rulers of small tracts lying between great countries were called *Antara-bawgika Yaza. Ekkha-datha Yaza* was granted most often to judges and magistrates, and the form *Mahdā mada Yaza* belonged in particular to *wungyis*, *atwinwuns*, and *mat-gyis.*

Nemyo (နေမျိုး).—*Nemyo* originally means a member of the solar race descended from the Thamada Min, Adeissa Wuntha, who reigned when the world began to exist. This is the better meaning, but some say that *nemyo* merely means splendour like that of the sun. Common forms were—

Nemyo-thiri (နေမျိုးသီရိ).
Nemyo-kyawdin (နေမျိုးကျော်ထင်).
Nemyo-nawrata (နေမျိုးနော်ရထာ).

It was a title most commonly given to village *thugyis*, *ngwekunhmus* of the Myelat, and subordinate provincial officials generally.

Pu-nya (ပုည).—*Pu-nya* means knowledge. Thus—

Thare-punya (သရေပုည), one who has good sound knowledge.
U-dein-punya (ဥဒိန်ပုည), a skilled elephant rider.
Turin-punya (တုရင်ပုည), a notable equestrian.

Wera (ဝေရ).—*Wera* means industry and intelligence. Usual forms were—

Theinka-wera (ထိန်ခဝေရ).
Pyanchi-wera (ပျံချီဝေရ).
Wera-kyaw (ဝေရကျော်).
Wera-pyanchi (ဝေရပျံချီ).

Gônban (ဂုမ္ဘံ).—*Gônban* means an ogre. It was properly a military title and the grades were—

Dewa-gônban (ဒေဝဂုမ္ဘံ).
Raza-gônban (ရာဇဂုမ္ဘံ).
Nara-gônban (နရာဂုမ္ဘံ).

The last being the highest.

Teza (တေဇ).—*Teza* means brilliance.

Common forms were—

Teza-thura (တေဇသူရ).
Teza-nara (တေဇနရာ).
Teza-kyawdin (တေဇကျော်ထင်).

Sekka (စက္က).—*Sekka* means tools or weapons, and the titles—

Sekka-thura (စက္ကသူရ),
Sekka-kyawdin (စက္ကကျော်ထင်),
Sekka-pyanchi (စက္ကပျံချီ),

were most commonly given for military services, as were also those of—

Sektut—(စက်တွတ်),
Sektut-kyawdin (စက်တွတ်ကျော်ထင်).
Sektut-yèdin (စက်တွတ်ရဲထင်).

Danu (ဓနု).—*Danu* means an archer. The title was commonly given to those who distinguished themselves in the annual sports at the palace and the following were the usual forms:—

Danu-thura (ဓနုသူရ).
Danu-yèhla (ဓနုရဲလှ).
Danu-raza (ဓနုရာဇာ).
Danu-kyawzwa (ဓနုကျော်စွာ).
Danu-yanaung (ဓနုရန်အောင်).
Danu-kyawgaung (ဓနုကျော်ခေါင်).

Ekka (အဂ္ဂ).—*Ekka* means dignity. It was originally a purely military title. The following were common combinations:—

Ekka-kyawzwa (အဂ္ဂကျော်စွာ).
Nemyo-ekka-kyawzwa (နေမျိုးအဂ္ဂကျော်စွာ).
Ekka-dewein (အဂ္ဂဒေဝိန်).

Thurein (သူရိန်).—*Thurein* is a brave soldier of the army of *nats*; hence—

Thurein-tansaung (သူရိန်တန်းဆောင်).
Nemyo-thurein (နေမျိုးသူရိန်).
Mahā-thurein (မဟာသူရိန်).
Mingyi-mahā-thurein (မင်းကြီးမဟာသူရိန်).

Rama (ရာမ).—The authors of the *Mahā Yazawingyi* say that after the birth of Prince Rama the whole country was prosperous and happy. Therefore his name was adopted as a title of honour and implies happiness and prosperity, and it was granted only to kings and prince. Usual forms were—

Thameintaw-rama (သမိန်တော်ရာမ).
Thurein-rama (သူရိန်ရာမ).
Rama-kyawdin (ရာမကျော်ထင်).
Thurein-ramakyaw (ထုရင်ရာမကျော်).

Thawun (ဿဝန်).—*Thawun* means beauty. This was a title given to such ministers and officials as appeared before the King on his right hand at audiences:—

Raza-thawun (ရာဇဿဝန်).
Thawun-letya (ဿဝန်လက်ယာ).

Dewa (ဒေဝ).—*Dewa* has a variety of meanings, but as a title is said to mean "rain." The titles—

Dewa-thura (ဒေဝသူရ),
Dewa-kyawdin (ဒေဝကျော်ထင်),
Dewa-thiri (ဒေဝသီရိ),
Dewa-pyanchi (ဒေဝပျံချီ),
Raza-dewa (ရာဇာဒေဝ),

mean that the officers bearing them defeated the enemy as rain extinguishes fire.

Einda (ဣန္ဒ).—The word *Einda* means government, and such titles as the following were commonly given to subordinate officials:—

Einda-kyawzwa (ဣန္ဒကျော်စွာ).
Einda-kyawthu (ဣန္ဒကျော်သူ).
Einda-thiri (ဣန္ဒသီရိ).

Theta (သေဋ္ဌ).—*Theta* was a title given especially to those who came of a family distinguished for its public services. Thus—

Theta-zeya (သေဋ္ဌဇေယ).
Theta-naya (သေဋ္ဌနာယာ).
Theta-raza (သေဋ္ဌရာဇာ).

Bômma (ဘုမ္မ).—*Bômma* was a title peculiar to revenue collectors, *thugyis*, surveyors, and collectors of taxes generally:—

Bômma-pade (ဘုမ္မပတေ့).
Bômma-pakyan (ဘုမ္မပကြံ့).
Bômma-thura (ဘုမ္မသူရ).
Bômma-zeya (ဘုမ္မဇေယ).
Bômma-si (ဘုမ္မစည်း).

Bômma-kittara (ဘုမ္မခေတ္တရာ).
Bômma-thaman (ဘုမ္မသမန်).

Bawga (ဘောဂ).—*Bawga* means riches, and the title was given to wealthy traders and such like people:—

Bawga-thiri (ဘောဂသီရိ).
Bawga-zeta (ဘောဂဇေဌ).
Bawga-raza (ဘောဂရာဇာ).

Sandra-kanta-shein (စန္ဒြကန္တရှိန်) means the amiable and noble king, and—

Sanda-kanta thiha (စန္ဒကန္တသီဟ) and
Nekkatta Raza (နက္ခတ္တရာဇာ)

have the same meaning.

Manuha (မနုဟာ), another royal title, meaning an equality with the *nat-dewas*.

Azagaru (အဇာဂရု), the possessor of supernatural wisdom, was a title given to the *pônna* who foretold the day on which Thalun Mintaya would die—the 10th waxing of *Tawthalin* 1010 B.E. (September 1864).

The title of the Kathè *Sawbwas* (the Manipuri Chiefs) were—

Mahā-raza (မဟာရာဇာ).
Zuda-raza (ဇုဓရာဇာ), a minor *Sawbwa*.
Mahā-shein-raza (မဟာရှိန်ရာဇာ).
Sana-padi (စနာပတိ, Councillor).

The titles of the Kathè *amats* were—

Sandraw-mawni (စန္ဒြော်မော်နီ), a crowned *amat*.
Thiha-sari (သီဟစာရီ).

The classical names given to the various provinces were—

Mahā-nagara (မဟာနဂရ).
Kema-wara (ခေမဝရ).
Zinyôn (ဇင်းရုံး).
Tama-leitti တာမလိတ္တိ).
Ayôddaya (အယုဒ္ဓယ).
Thunaparanta (သုနာပရန္တ).
Tampa-dipa (တမ္ပဒီပ).
Kambawza (ကမ္ဗောဇ).
Sein (စိန်).
Ramanya (ရာမည).

[For the titles of ministers at the time of the annexation and for details of the offices they held, as well as for the list of palace officials and buildings, *see* Chapter XVI.]

Royal paraphernalia.

Umbrellas.

The *Shwe-pôn Ni-dan* is a treatise which gives much curious information about Palace matters and professes to explain the origin of many of the Palace usages and paraphernalia. It gives a list of eleven varieties of royal umbrellas and the *nat-thamis*, the spirit-maidens, who watched over them. These were:—

The *Kanekkadan hti* guarded by the *Thamadewa nat-thami.*
Thamôddarit hti guarded by the *Thamôddarit nat-thami.*
Thamôddaza hti guarded by the *Thamôddaza nat-thami.*
Sanda hti guarded by the *Sanda nat-thami.*
Thuriya hti guarded by the *Thuriya nat-thami.*
Paduma hti guarded by the *Paduma nat-thami.*
Thamôkkha hti guarded by the *Thamôkhha nat-thami.*
Withagyun hti guarded by the *Withômma nat-thami.*
Kambu hti guarded by the *Kambu nat-thami.*
Uyu hti guarded by the *Uyu nat-thami.*
Thamuti hti guarded by the *Thamuti nat-thami.*

These umbrellas were embellished inside and out with pictures in gold of sylphs and fairies, thin gold plates shaped like a banian leaf were fastened at the top, and the handles were of gold adorned with pearls, diamonds, rubies, emeralds, coral, and with spangles. The *Insauk* and the *Inlya* minutely describe these umbrellas.

The *Thamuti* umbrella was that used by the Mahā Thamada Kattiya Min, the first king chosen in this world. It derives its name from *thamôt*, to call. He also used the *sanda* and *thuriya htis*, the umbrellas of the moon and sun. The *kanekkadan* umbrella was the gold-handled umbrella by right, from *kanakadanta* which means the golden handle.

The umbrella used by the King when riding on an elephant, or travelling in a carriage, a barge, or any sort of conveyance was called a *yin hti*. The *kanekkadan hti* always stood beside the throne, and it was this model of umbrella which crowned the main spire of the palace, so that the sovereign should always be in its shade. King Pyusawdi, it is recorded, had an umbrella with a spread of fourteen and a half feet from side to side and with a coral mounted handle measuring two and a quarter feet.

Betel-box.

The *karawaik*-shaped betel-box is said to date from the time of Athawti Meitta, a queen of Asoka's. One day she heard from the palace the melodious note of the *karawaik* bird and said to herself: if the voice of the *karawaik* be so sweet, what will the voice of God be like? She was persuaded that from the moment she heard the *karawaik* she had

attained to the first stage of *Nirvana* and from this time forth *karawaik*-shaped betel-boxes were used by all kings.

The *hentha*-shaped betel-box also owes its origin to a queen, the Queen of Baranathi (Benares). A *hentha* was snared and presented to the king. Its legs were chafed by the gin. The queen tended it and set it free and in memory of this the *hentha*-shaped betel-box was always a royal emblem.

The palace.

The palace was called the *myenan* because it stood, like the Myinmo Mount, in the centre of the four islands which first appeared on the earth. It symbolizes the Bawdibin Shwepalin, the birthplace of Buddha, which was the last point to disappear in the old world and the first to appear in the new. There is also a reference to the *Tissathu Karawetmin Zat*, which recounts that after the pigs had overcome their enemies, the tigers, they built a mountain of earth and enthroned their king upon it, who sat on a *pipul* tree and blessed them with sacred water. Therefore at the coronation a king sits on a board of pipul wood and the *pônnas* pour water from their shells on him to consecrate him king. This board and the throne must be painted with the flowers of the lotus, the *shwe padômma*. In early times the lotus flowers were yellow like the monkish robe and therefore the throne and all the Hall of Audience was painted with golden lotus-flowers. On either side of the *mintet taga*, the State staircase, to the east of the *myenan*, stood the *pyaw-tha turintha*. There were four of them; their turbans were tied in the shape of nooses and they held rattans in their hands. This was in memory of the Nagā Princess who set eight Nagā ministers to guard her son Pyusawdi against the *galôn* (the roc). Each of them held a noose in his hand. *Turin* and *dwaya* are said to be Magadha words meaning one who waits at a door, and *pyaw* is an obsolete Burmese word meaning to stand on one side. The custom seems a relic of serpent worship.

The *Shwe-pôn Ni-dan* has the following note on the *baho-si*.

Drums.

In the reign of Thado Taing-ya Min in Tagaung there were five great bells and five great drums. The bells were called *nadaw-lyauk*, *nadaw-tin*, *nadaw-pa*, *nadaw-saung*, and *nadaw-than*, and the drums were called *paukcho sigyi*, *kapyin sigyi*, *saga sigyi*, *padauk sigyi*, and *kyun sigyi*. They were four cubits wide at the end. Two large drums, called the *muyo sigyi*, which were presented by the *nats*, were placed on either side of the *Kanekkadan* umbrella. The *saga sigyi* is what was in modern times called the *baho-si*. The other four were called the drums of the city gates. Some say that formerly the five bells and the five drums were sounded alternately in pairs.

The *baho-si* was sounded as follows: one gong at sunrise (*ta-chet-ti)*, and then two, three and four gongs (*hnit-chet-ti*, &c.,) at intervals of three hours. To distinguish the watches the number of strokes was increased in correspondence with the *Wundana Mingala* invocation. Thus at one gong eleven strokes were sounded; at two gongs, twenty-two; at three gongs, thirty-three; and at four gongs, forty-four. This makes a total of one hundred and ten strokes. This divided by four gives a quotient of twenty-seven with a remainder of two. The twenty-seven stand for the twenty-seven *nekkats* or constellations and the two stand for the sun and the moon. The divisor four represents the four great elements (*dat*)—earth, air, fire, and water. In the creation of the world we are told the sun and the moon appeared neither first nor last. The night watches are sounded in the same way as those of the day. The last stroke of each watch is always delayed by the time that it takes to strike the belfry, so that it appears to hang. This has a reference to the bells rung at the time of repeating the *Diga Thaddingula* invocation.

There was another drum called the *minkya-si* or *mingala-si*. This, it is said, was instituted by King Dhamma-yi in the country of Nayayi. He built a large shed in the open space to the east of the palace and hung in it a large drum which the people of the country were to strike when they sought redress from the King. Hence this drum was often called the *taya sigyi*, or drum of justice.

It is related that King Dhamma Yayi's sons, Thuriya Kômma and Sanda Kômma, were holding a *pwè* and that a pair of cranes appeared in the sky overhead. The two princes were indignant that anything should venture over their heads and shot the male bird. The hen-crane came down to the *minkya-si* and struck it with her bill. The King heard it and rendered her justice. *Minkya-si* means the drum which the King hears, and *mingala-si* the drum of good omen. After King Dhamma Yayi's time the drum was kept in a wide open space and securely fenced round. The name *mingala-si* seems to have been used because this drum was sounded when the King came out of the palace. This was announced by eleven strokes of the drum, which represented the eleven syllables *A-chein thin-byi twet-daw-mu-u-daw paya* (အချိန်သင့်ပြီ။ထွက်တော်မူဦး တော်ဘုရား)—It is the auspicious hour; issue forth O King! The *muyo-si* was also ordinarily sounded when the King left the palace. The old books say: "The *bĕng*, *bĕng*, sound of the great drum "shakes the earth and warns all enemies to keep afar."

On the fifth waxing of *Waso* (July) of each year one of the great drums was carried and sounded round the city and it was proclaimed aloud that this was the date on which the Lord Buddha left the

Mahabawdi Mandaing and entered the Migadawun forests to observe the Lenten fast, and on this day all were to abstain from evil deeds. This custom, it is said, was not kept up in the reign of Pagān Myinsaing in Tharekettara, but was the ancient usage in the time of Hanthawadi Sinbyumyashin. The drum used on this occasion was always that hung at the east gate. The others were never moved.

The Hlut and the Wungyis.

The first *wungyis* were the *nagā amats* appointed by the Dragon queen to watch over her son Pyusawdi, the King, who was also furnished with a bow and arrows by his father, the Sun Prince. In Myissi Madetha four members of Sanda Kôttamin's family became the first ministers of State. They were Yaza-wuttana, Napa-wuttana, Dewa-wuttana and Zeya-wuttana. They met together in one place and at their first meeting a handful of rice and an umbrella were given to each of them as a token of their allegiance to the King (of Pagān). Each of them had charge of a quarter of the town and of the country beyond as far as the land of the *nagās*. The building in which they met was called *yôn* from the word *su-yôn* (စုရုံး) which means to assemble. From their discussion of affairs of State the building in which they assembled was also called the *hlut* which is a contraction of *Kwin-hlut* (ခွင့်လွှတ်), which means to be privileged.

Another account of the origin of the four *wungyis* assigns their inception to king Narapadisithu. He had five sons, Zeya Thura, Ginga Thura, Yazathu, Pyanchithu, and Zeya Theinka. King Narapadisithu had a very bad whitlow on his second finger and the mother of Zeya Theinka, the youngest prince, put it in her mouth to soothe the pain. The King in recognition granted her request that Zeya Theinka might be appointed king to succeed him. Another version says that the five sons were seated in a circle with a white umbrella in the midst and that the white umbrella inclined towards Zeya Theinka, who was thereupon appointed Heir Apparent. The four elder brothers were appointed his advisers in State matters by Zeya Theinka and were the first *wungyis* and met in the buildings called *yôn* and *hlut*. Ever since four *wungyis* have been appointed to manage the affairs of the country. Zeya Theinka is commonly referred to as King Hti-lo Min-lo in allusion to the story of the umbrella (ထီးလည်းထိုသည်မင်းလည်းထိုသည်). It is also recorded that there were four *amats* in the kingdom of Wideharit.

The four Win-hmus.

The four sides of Tawadeintha, the abode of *Thagyas*—the east, *Datarata* (ဓဋ္ဌရဋ္ဌ), the south, *Wirulaka* (ဝိရူဠက), the west, *Wirupekka* (ဝိရူပက္ခ), and the north, *Kuwera* (ကုဝေရ)—are placed in charge of four *nats*. In the same

way four *win-hmus* are set in charge of the four sides of the Palace and the City-gates in the country of men. The King stands in the place of the Withagyôn *nat* (ဝိသကြုံ), who created all things in one night, and the *win-hmus* guard him round about. They had their appropriate flags flown in their respective quarters. That on the east *win* was silver, or white; on the right (*i.e.*, the south) it was green; in the west *win* it was red; and to the left (the north) it was yellow.

These symbolize the colours of the four sides of Mount Meru· Each *win-hmu* had his appropriate *dha*, or sword, presented to him, stamped with the name which belonged to his quarter—*hman-ku* for the East *win-hmu*; *hko-nan* for the Right *win-hmu*; *sek-wun* for the West *win-hmu*; and *pôn-nan* for the Left *win-hmu*. These were considered names of good omen. The *hman-ku* was a mark in the shape of a plum impressed on the forehead, derived like the *sa-lwè* from Brahmans and considered as a sign of high rank.

The *hko-nan* was the abode of the King of Pigeons, Seittaragiwa (စိတ္တရဇီဝါ),

The *sek-wun* "was a weapon with a circular edge like that of celestial weapons."

The *pôn-nan* or *nan-pôn* means the model of the Palace. It is asserted that the ancient palaces of Tagaung, Tharekettara, Pagān-myinzaing, Sagaing-pinya, Taung-ngu, Hanthawadi, and Môttamā were of moderate size and had not the number of out-buildings and wings which characterized the later Shwe-bôn Shwe-nan. The betel-box used by the Crown Prince was fashioned in the shape of the *pôn-nan* Palace, which was that of King Narapadi.

The Hle-su Hpaung-su.

There was an extraordinary variety of boats or rather of names for boats. The chief Royal boats were four in number: the *Tharabimān* (သာရဗိမာန်), the *Kamakaw* (ကမ ကော်), the *Tharaka* (သာရကာ), and the Ikin (အိကင်း). As to the origin of these the following legend is told. In the time of the Thatôn kings there was a huge tree with four great branches which grew in the Royal forests. It was seen that a black *mina* perched on one branch and sang, a flying squirrel sat on a second, on the third a centipede lay crosswise, and the fourth branch was all covered with knobs. This tree was hewn down and cut up into boats. The boat fashioned out of the bough covered with knobs had a resemblance to a temple (*Bônbimān*), and therefore it was called the *Tharabi*-(or *beik*) *man* boat. That on which the flying squirrel perched was hollowed into a boat called *Kamakaw*, which some say is a squirrel with a face like a tiger, while others declare that it is a *kamba* (ကမ္ဘာ) fish, a specimen of which was found in the hollow of

the bough. Both the squirrel and the fish figured on the boat as carved by the *yamanya* (the royal carpenters), but the boat shaped like a fish was usually called *Thuya Nga-gyin* rather than *Kamakaw*.

The branch on which the black *mina* perched furnished a boat which was called *Thalika* after that bird. The Brahmin astrologers aver that the Thagyas and Brahmas frequently assume the form of a black *mina* and sing to mortals. *Thalika* in later days was corrupted into *Tharaka*. In allusion to the astrologers' theory the *Tharaka* boat usually had carved on the bow the figure of a Brahman pouring consecrated water out of a shell and on the stern the figure of a Brahman in a house.

The boat cut out of the branch on which the centipede rested was called *Akin* (အကင်း), a centipede, which later was softened into *I-kin*.

The trunk of the tree was very large and was hollowed out into a barge which was called *Min-hle*, afterwards changed into *Min-sihle* and *Nan-sinhle*.

The notable tree which furnished these five boats was a mountain jack-fruit tree. The proper emblems for the four boats were a brass spire for the *Tharabeikman*, a *tulut sankyaw* (တုလွတ်စံကျော်) palace for the *Kamakaw*, a large State palanquin for the *Tharaka*, and a pair of drums for the *Ikin*.

Many varieties of boats were named from the places whence their models were taken, such as the *Zimmè*, *In-ma*, *Pyi-lôn-an*, *Pyi-lôn-kyaw*, *Pègu Naing-ngan*, *Yan-naing*, *Pyi-in-ma*, *Bôn-daw*, *Naing-ngan*, *Tha-byu*.

When the three kinds of calamity prevailed in Wethali, the Thagya *nat* fashioned a boat in which the Lord Buddha travelled on the river, and all created things, men, *nats*, and Brahmas came and worshipped him. This boat was therefore called the *Thônlupusaw*. In its bows stood figures of the King of Brahmas, the King of *nats*, and the King of men, each wearing his crown, and in the stern were planted three umbrellas.

The *Pyigyi-minhle* was carved from stem to stern with figures of men, fifty in number, on both thwarts. These represented the submission of the hundred kings of all other nations to the Monarch of Burma.

When the King travelled in state these two boats, the *Thônlu Pusaw* and the *Pyigyi-minhle*, took station in front of the royal barge.

The *Nawarupa* or *Nawaraza* boat had figures of five Brahmas in the prow and four in the stern, in memory of the nine Brahmas who appeared on earth in the beginning of the world. This boat dates

from the time of the Mahā Thamada-min, the first king of this world-cycle. Other notable boats were the *Thingan-net*, the *Linzin* or *Laza* boat, with a low bow and lofty stern, which came from Luang Prabang, and the *Pathôn* or *Byathôn* boat. It was in this boat that the King of Môttama (Martaban) went to bathe in the Pun-sanlaing and to drink its water. The Pun-sanlaing was the place where the "five great rivers" join just above Moulmein and the Ogre's Isle. Here great *pwès* were held in remembrance of those instituted by the *bilus* of the Byinnat hills, who stood in great dread of the *athamôk-ki*, a species of centaur, with the body of a man and the head of a horse. A figure of an *athamôk-ki* decorated the stern of the *Pathôn* boat. For long the water of the Pun-sanlaing was used for drinking purposes in the palace and till quite recent times it was used on the *Thingyan* days and for the head-washing of the King and the Chief Queen.

The *Azalôn* or *Azalômpani* boat had a figure of a goat (*azu*) with a brinjal (*lômpani*) in its mouth and its forefeet resting on the prow of the boat, and its two hind legs and tail at the stern.

The *Pyikôn* (ပြည်လုန်း) was a boat in which the King received addresses from his subjects. In the bow stood a figure of the *Nat* of the Moon and his palace, and in the stern that of the *Nat* of the Sun with his mansion, commemorating the fact that the Sun and Moon paid homage to the first King.

Other boats were the *Thuyaung*, on which was] figured a *Nat* holding the five kinds of weapons, the *Ginga-zeya* or *kyi-hle*, which was decorated with a crow, the *Tharaba*, which had a royal crown at bow and stern, and was sometimes called the *Tharapad* boat, because it was caulked with a mixture of wood-oil, earth-oil, and fish-oil, and it was in such a boat that Sithu Kyawdin was taken safely across the river to Ava, in the face of a rising storm, by a sententious *tharapad*, which was the name given to the royal caulkers.

The *Dwalaung Hle* had a forked bow and stern; the *Thuwa Hle* the figure of a parrot; the *Rammathanthu Hle* that of a "tame" crocodile; the *Manuthiha Hle* the figure of Manuthiha, a monster with the face and hands of a man and the body of a lion; the *Thônsè Hnittan Hle* was thirty-two fathoms (192 feet) long, had a high-raised stern, and a large royal spire to shelter the King and his attendants. The bows were elaborately carved.

The following notes are furnished about the *yè-hle*, the war-boats or canoes,—They are said to have been first fashioned by the Nemin, the King of the Sun, and at the same time he made the *Yè-tagôn* the war-flag, and the *Yè-ka*, the fighting howdah. The *Yè-hle* had a prow shaped like the Gandamadana Taung-nyun; the war-flag

was made on the model of the Thudathana-myo; and the war-howdah like that of the Thagya Min, the King of the Heavens, when he rode his *Eyawun Sin* (ဧရာဝဏ်ဆင်), the three-headed elephant, or the *Thumeitta Sin* (သုမိတ္တဆင်). These the King of the Sun gave to King Pyusawti, who, though he was merely armed with bow and arrows, gained from the boat, the flag, and the howdahs, courage on water and on land, whether on foot or mounted, which could be withstood by none. The King of the Sun at the same time set up *Yètagôns* before his mansion and from the time of Pyusawti it was customary for the governors of the golden umbrellas and of the Golden Throne to have *yè-tagôns* set in front of them when they came out of the Golden Palace.

The *yè-hle* were of three kinds—the Thamban (သမ္ဗန်); the Kattu (ကတ္တူ); both of which were of Chinese fashion, the latter like a junk in shape; and the *lun-kyin* (လွန်းကြင်) shaped like the *lun-kyin*, a water-bird which has not been identified.

King Naratheinka of Pagan first made the *Lun-kyin* boat. He had sent his younger brother, Narapadi, to take Weluwadi, and a horseman rode hard to announce a success at Ngasaungkyan. Night overtook him and he bivouacked on a sandbank close to the royal camp. His horse neighed and the King heard it and recognized the sound. He struck his pillow with his hand in his delight at getting news and so the place got the name of Ônbauk (a burst pillow), which name it retains to the present day. It was at this place that he received a present of two *lun-kyin* birds, cock and hen, sent him from Mogaung and Mohnyin, and as he looked upon it as a spot of good omen he had a boat built with the presentment of the heads and breast of the birds in the prow and their tails in the stern and this was known as the *Lun-kyin Hle* and has served as a model for that sort of boat ever since. Others say that it was Alaung Sithu who first saw the *lun-kyin* birds and noted their constancy and the way in which the birds, cock and hen, interlaced their necks. The boat which he built was called *Manapa* (မနာပ) *Hle*, but it is of the same model as the *lun-kyin* boat.

The *Kattu* (formerly written *Hkatu*) boat is said to take its name from the Yamanyā language and to imply a boat with a raised prow and a stern shaped like the waxing moon. When King Thupinya Nagaya Theinna conquered the Kanyan (ကမ်းယံ) country he wished to carry off the standing golden image of Gaudama to Tharekettara by way of Mawdingarit in a *kattu* boat, but the whole body of ministers protested and said that, though a *kattu* boat could carry a cargo of considerable weight, it could not carry a standing image of the Buddha in a seemly position. The King

therefore melted down the image and carried it to Tharekettara in that way. Much of the sacred metal was stolen on the way, and it was this sacrilege which brought about the downfall of Tharekettara (Prome). The name of the boat *Kattu* has been regularly maintained since the reign of this king.

Much more of this painfully minute and conscientious etymology and research, together with the names of a great variety of other boats is to be found in the *Shwepôn Nidan*.

The people under native rule.

Before, at, and after the annexation of Upper Burma many villages were destroyed by dacoits or deserted for fear of them, or the villagers were removed by Government for harbouring them, and, though large numbers have everywhere returned, it was a good many years before the population again became normal, and hardly any district can even now be said to be just what it was before the annexation.

Villages in Upper Burma are generally surrounded with a double, or at least a single, thorn hedge, with one or more gates, usually well protected. This as much as anything else shows the insecurity of the country under native rule. The thorn hedges and the gates were usually formidable enough to prevent a village from being taken by surprise, or overcome by any but a strong band of marauders. In the fence, however, there were always some *ma-lwèpauk*, some holes that were "not easy," made by the village dogs or pigs, or the children, and through these small parties of dacoits not unseldom made their entrance, plundered the chief houses, and got clear away before the villagers realized what was going on, or could get a supply of torches.

The houses everywhere were of a very temporary character. They consisted mostly of a few poles, walls of bamboo matting, a thatched roof, and floors of thin planking or more commonly of split bamboo. Houses of timber throughout, or with tiled roofs, were everywhere rare and in all but the riverine towns practically non-existent. Brick built houses were exceedingly rare out of Mandalay and these belonged mostly to Chinese or Indian traders, who only built them after obtaining a patent which permitted them to do so.

In many parts of the country, in upland villages, and in places where there was no need to raise the house on piles above flood level, it was generally a mere hut, often of palm leaves and built flush with the ground.

A well-to-do house is raised from five to eight feet above the ground. A flight of steps (*hlega*), sometimes made of rough *dha*-hewn planks, oftener of simple rounded branches or lengths of

bamboo, occasionally only a thick plank with notches cut in it for a foothold, leads up to a small verandah (*kwekada*), which is chiefly used by the house dog as a sleeping place, and as a place where visitors might leave their shoes; next to this comes a long verandah (*zayanta*), from one end of the house to the other. The building has two roofs, parallel to each other and joining above a water trough or runlet (*ye-ta-yauk*). The kitchen (*mibo*) is to one side of the building with a separate roof. The floor of the joining part between the two buildings which form the house is a few inches lower than those of the main building and is used as a passage-way to the kitchen.

The posts are of teak, four in the front and back and six on either side. Strong beams (*yet-ma*) are passed right through the posts, and upon these rest cross-beams (*sin*) about a foot apart. Over these is spread the split bamboo flooring (*kyan*), which is tied down with rattan. The usual height from the flooring to the roof is seven and a half feet. The walls are of bamboo matting (*yaing*) with wooden frames (*zali*). There are no windows in the house, except two in the eastern wall of the front building, where there are two *htauk taga*. Each of the two rooms in the back building has a door, and there is also a low door into the passage-way to the kitchen. The front building is especially reserved for visitors and in the back are the family sleeping quarters. Along the east wall of the front building there is a shelf (*nyaung-ye-o-sin*), upon which are placed an image of Gaudama and three flower-pots or vases, with the fresh leaves of the *nyaung-bin*. Every morning, before the family has breakfast, rice with some sweetmeats and flowers are placed before the image as offerings. Religious super tition takes charge of almost every part of the building of the house and, when it is finished, *bedin* also directs on what day and in what manner the family shall move in.

A cocoanut is always suspended at the south-east angle post of the house in honour of Min Māgayi, the powerful spirit worshipped specially at Popa hill in Myingyan (*see* under *Religion*) and in Tagaung. The custom is said to have been instituted by King Kyan-yit-tha, the father of King Nawra-hta of Pagān.

It is believed that the knots in the wooden house-posts, marking the places where branches grew, are a fruitful source of misfortune. It is to guard against the ill-luck they may bring that pieces of white cloth are placed on the top of all the posts, or at least on one out of every three. To promote good fortune a little unguent made from the bark of the fragrant *thanaka* is often also smeared on.

These pieces of white cloth are put on the top of the posts of all wood-work buildings, monasteries, *zayats*, rest-houses, and bridges,

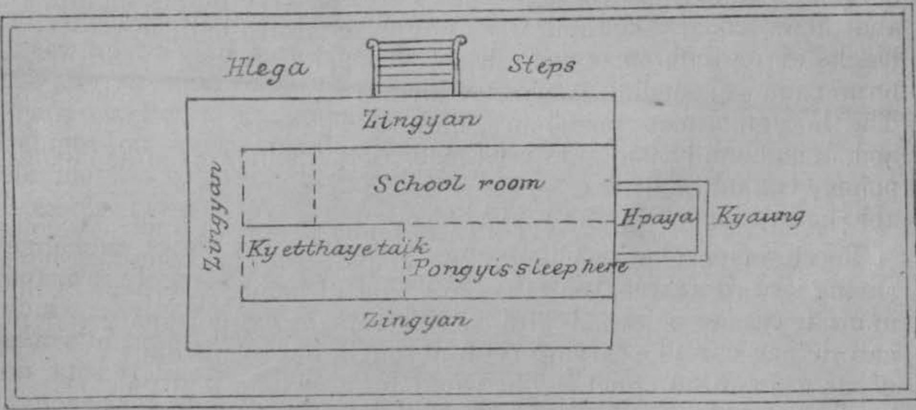
as well as dwelling-houses, to guard against the evil spirits who might lodge in the knots.

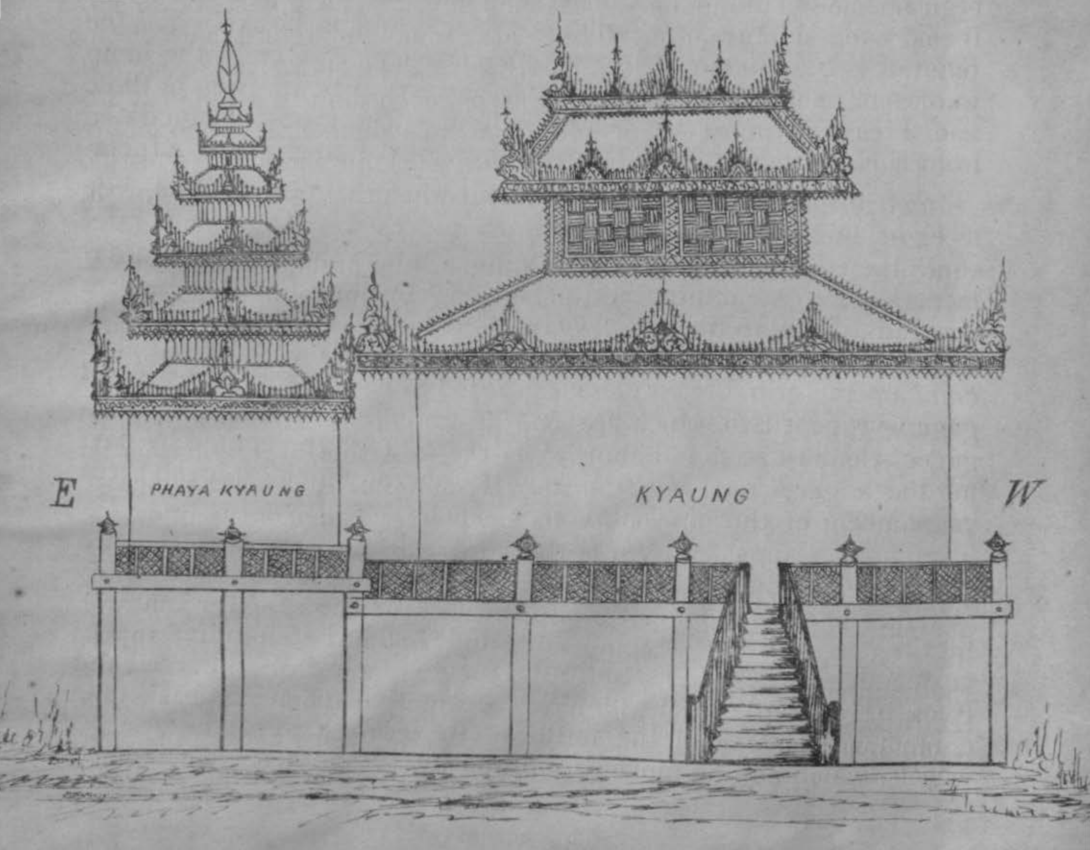
Burmese bridges were always very substantial and sometimes very handsomely ornamented with carved work. In this matter the Burmese were far ahead of the natives of India. Bridges were seldom wanting where deep channels or swamps obstructed communications. Sometimes these bridges were of extraordinary length, as for example near Amarapura. They were always built in the same way. Large teak posts were driven in in pairs or triplets, with bays between not exceeding twelve or thirteen feet. Mortice holes were cut through these posts, in which cross-beams were laid, with beams and solid planking over these. The railings often had handsomely turned balusters.

Monasteries or *pôngyi-kyaungs* are almost always built of wood. It is only in very poor villages, or in parts of the country where timber is very scarce, that they are built of bamboo. Some of the monasteries are adorned with carved work of extraordinary variety and richness. The carving is often rough, but seen from a distance it has a fine bold effect. The wood for a *kyaung* is usually selected from the best and most seasoned logs. The posts are sometimes excessively large. They are smoothed round and often painted red, sometimes gilt or partly gilt. The staircase is generally of solid masonry work and the steps, according to a long established custom, must be in odd numbers, which are supposed to bring luck. There is a verandah (*zingyan*) on three sides of the *kyaung* in which the monks walk about when they are wearied with silent meditation.

On the eastern side a small building, a little higher in the flooring than the main structure, is attached and an image of the Buddha Gaudama is placed there (*hpaya kyaung*). Over this separate *kyaung* is placed a *pyathat*, or many-tiered spire with an umbrella (*hti*) on the top. There are supposed to be no rooms made in a *kyaung* except two, which are, one at the corner of the south-west part of the building, and another on the west side. The former is used as a store-room (*kyet-thaye-taik*) and the latter for the younger members of the monastery to sleep in. The *pôngyi* prior, or head monk, sleeps (*kyeinthi* is the word) at the corner of the south-east of the building, that is to say, in the part closest to the *hpaya-kyaung*. The north-eastern part is used as the school-room and for the reception of visitors. The whole building stands in a spacious compound (*hparawaing*) often planted with fruit and flowering trees, or rare and curious plants. In the south-west corner of this compound are placed the latrines (*ku-di-eing*), small houses on wheels, which can be moved from one pit to another. The whole

compound is marked off by a fence, sometimes a built wall, sometimes a mound of earth planted with shrubs, sometimes a hedge of cactuses, and occasionally a mere railing. Within a certain distance of this, usually marked by pillars, the taking of life of any kind is forbidden. A rough plan is given below.





The Burmese village community was not so elaborately organized as is, or was, the case in India. It nevertheless does look on itself as a corporate whole and in many cases all the villagers are related to one another by blood or marriage. The headman was the *thugyi*, who frequently had more than one village and, in villages where he was not resident, he was represented by the *ywa-ôk*. The *lugyis*, or village elders, formed a committee for managing village affairs, and there were *gaungs* who ruled over quarters of the village, or blocks of ten houses (*ayat-gaung*, *sè-eing-gaung*). *Taw-ge* was a term used in small hamlets approximately equivalent to *ywa-ôk*. The *thugyi* had a clerk (*saye*) and sometimes a crier (*ywa-zaw*), and this completed his establishment. There were no regular police, but the *myothugyis* and *thugyis* had power to call out all able-bodied men to help him to keep the peace or arrest ill-doers.

There was no national banking system, or system of exchange among the Burmese traders. Money was not so largely invested in ornaments as it is in India. Sometimes it was saved, in which case it was buried in the ground, but usually it was spent in works of merit, or in merry-making, social or religious. Traders kept no regular account books; the most that was done was to make rough memoranda in *parabaik*, white or black folding books. Till the reign of King Mindôn there was no currency. Silver in the lump was used, as in China, away from the coast-ports, the viss of three and three-quarter pounds being the unit. Burmese coinage dated from B.E. 1214 (1852) and followed the series of coins in use in India.

Interest was payable by the month. In small transactions, four to eight annas a month on each ten rupees was a common rate, equivalent to from thirty to sixty per cent. in the year. If ornaments, or moveable property, were given in pawn four annas were charged; if they were not given in pawn, though mortgaged, eight annas was charged monthly on every ten rupees of value. The commonest form of mortgage of immoveable property was mortgage with possession for three years. After three years the mortgagee remained in possession until the mortgagor redeemed by paying the original loan, which he might do at any time after the three years, even through his heirs, three generations after.

The advance of money and seed was common at sowing time, to be repaid after the harvest. It was a system of ensuring a supply of grain frequently adopted by European speculators. For example, if a basket of *pègyi* is selling at two rupees, or two hundred rupees the hundred baskets, the cultivators are advanced one hundred and ten rupees by the agent and have to supply one hundred baskets in repayment at harvest time, and similarly with other crops.

Much importance is attached by the Burmese to the possession of land, and the sale of land was most uncommon. Land mortgage was, however, very common and was most frequently effected on the terms mentioned above, but modifications could of course be made by agreement. Owing to the infrequency of sales, it is not easy to determine what the price of land was, but it seems to have ranged from twenty-three rupees the acre for dry crop land up to one hundred and sixty for wheat land and to as much as two hundred and fifty for naturally irrigated paddy-land; while thickly planted orchard land and gardens have realized as much as seven hundred rupees the acre, the orchard and garden plants being of course included. Building land in a town like Sagaing is worth about two hundred rupees, except in the traders' quarters near the steamer ghât, where it rises to about two thousand rupees the acre.

The following list of wages in places along the Irrawaddy shows the rate in the time of King Mindôn in 1885, about the time of the annexation, and at the present time:—

Wages.	In King Mindôn's time.	At the time of the annexation.	Present time.
	Per day.	Per day.	Per day.
	Rs. a. p.	Rs. a. p.	Rs. a. p.
Common, unskilled labour ...	0 4 0	0 1 0	0 6 0
Carpenter	0 8 0	0 12 0	0 8 0
Blacksmith	0 8 0	0 12 0	0 8 0
Coppersmith	0 8 0	0 12 0	0 8 0
Goldsmith	1 0 0	1 8 0	1 0 0
Silk-weaver	0 4 0	0 4 0	0 4 0
Tailor	0 8 0	0 8 0	0 8 0
Bricklayer	0 4 0	0 12 0	0 6 0
Bullock hire	1 0 0	1 8 0	0 12 0
Cart hire	0 4 0	0 8 0	0 4 0
Pony hire	0 12 0	2 0 0	1 0 0
Boat hire	According to the number of rowers at coolies' rates.		
	Per month.	Per month.	Per month.
	Rs. a. p.	Rs. a. p.	Rs. a. p.
Domestic servants ...	3 0 0	3 0 0	6 0 0
Trader's clerk or writer ...	5 0 0	15 0 0	15 0 0
Groom	7 8 0	12 0 0	10 0 0

Agricultural labourers got four annas a day and their food, three meals a day.

Prices at the same periods for staples ran as follows :—

	Rs.	A.	P.		Rs.	A.	P.		Rs.	A.	P.	
Rice	3	4	0	per basket	4	8	0	per basket	3	0	0	per basket
Millet	22	8	0		15	0	0		35	0	0	
Sessamum	3	12	0		2	8	0		3	8	0	
Wheat	450	0	0	per 100 baskets	110	0	0	per 100 baskets	230	0	0	per 100 baskets
Peas { *pègya*	90	0	0		50	0	0		65	0	0	
Peas { *pègyi*	250	0	0		65	0	0		225	0	0	
Cotton	18	0	0	per viss	10	0	0	per viss	17	0	0	per viss.
Tobacco	25	0	0		7	8	0		15	0	0	
Tea	0	8	0		0	8	0		1	0	0	
Plough bullock	45	0	0	average	30	0	0	average	55	0	0	average
Buffaloes	35	0	0		50	0	0		85	0	0	
Pony	25	0	0		40	0	0		80	0	0	
Fish	9	0	0	per 10 viss	3	12	0	per 10 viss	6	8	0	per 10 viss
Timber	30	0	0	per ton	30	0	0	per ton	55	0	0	per ton
Bamboos	1	10	0	per 100	1	4	0	per 100	2	8	0	per 100

Weights and measures.

1 viss, *peittha*=	100 tikals, *kyat*, or 3·65 lbs.
1 tikal, *kyat*=	40 *mats* or 2 *ngamu*.
1 *mat*=	2 *mu*.
1 *mu*=	2 *pè*.
1 *pè*=	6 *ywe*.

Measures of capacity.

1 basket, *tin*=	16 *pyi* or 2 *hkwè*.
1 *hkwé*=	8 *pyi*.
1 *seit*=	4 *pyi*.
1 *pyi*=	2 *hkwet*.
1 *hkwet*=	2 *sale*.
1 *sale*=	¼ *pyi*.
1 *sale*=	2 *lamè*.
1 *sale*=	4 *lamyet*.

Of length.

1 cubit, *taung*=	18 inches.
4 cubits=	1 fathom (*lan*).
7 cubits=	1 *ta*.
1,000 *ta*=	1 *taing*, nearly two English miles.
400 *taing*=	1 *yuzana*.

Land measure.

The unit of land measure for agricultural purposes in Upper Burma is the *pè,* for paddy-lands, which contained 1·7718 acres, and the *gan,* for alluvial formations. About half a mile south-east of the Arakan Pagoda in Mandalay town the standards are to be seen. About the year 1148 B. E. (1786 A. D.) King Bodawpayā, after the foundation of Amarapura, set up two squares of masonry as a guide for land measures. The larger of these represents the *Min* or Royal *pè*, and the smaller the *Pagadi* or People's *pè*. The following table is taken from the inscriptions placed in the centre of each square :—

Seven widths of paddy, called *ye-the saba* (this is described on the table as *san-byu khunnet, i.e.,* white grain rice, with a dark husk)=1 *let-thit.*

8 *let-thits*=	1 *maik.*
3 *maiks*=	1 *taung.*

The *taung* measured 19·05 inches and is engraved on the stone.

5 *taungs*=	...	...	...	...	1 *khan*.
7 *taungs*=	...	...	...	...	1 *ta*.
10 *tas* square=	...	...	...	...	1 *gan*.
25 *tas* square=	...	...	...	...	1 *pagadi pè*.
35 *tas*, 2 *taungs*, 1 *maik* and 4 *let-thits*, square=				...	1 *min pè*.

The *pagadi pè* measure is universally adopted by the Upper Burmans for their fields and its area of 1·7718 acres is exactly half of that of the *min pè*. When subdivisions are required the *pè* is thus divided.—

1 *pè*=	...	...	...	...	4 *seiks*.
1 *seik*=	...	...	...	...	4 *pyis*.

Architecture.

Mr. F. O. Oertel made a tour in Burma in 1891-92 for the purpose of making architectural and archæological studies. His impressions of Burmese architecture are as follows :—

" Burma has practically no buildings of any importance, antiquity or architectural pretensions, which are not connected with the religion of the country. The only notable exception to this is the royal palace at Mandalay. Of Burmese domestic architecture there is very little to say. This is no doubt due to the sumptuary laws, which in Burma have from ancient times restricted the use of all durable building materials such as brick and stone masonry, and all architectural adornments, to religious and royal edifices. The people live now, as they probably always did, in single-storeyed huts, raised a few feet above the ground and constructed of bamboo frame-work with split bamboo floors and mat partitions. A rough fence generally surrounds the house, enclosing a small courtyard. The richer people use teak posts and boarded partitions instead of bamboo. The roof is thatched, tiled or in some cases covered with wooden shingles. Under such circumstances there was of course no scope for any architectural elaboration.

" There are three distinct types of buildings in Burma, which may be classed as follows :—

" I.—Solid pagodas or topes enshrining relics, such as the Shwe Dagôn Pagoda, Rangoon.

" II.—Ornamented wooden monasteries (*pôngyi kyaungs*), including the royal palace at Mandalay, rest-houses (*zayats*), wooden shrines (*tazauugs*), &c.

" III.—Masonry temples, such as the *Ananda* and others, peculiar to Pagān and other old sites in Upper Burma.

I.—*Pagodas.*

" Of these three classes the first is the most interesting, both from the number and importance of the buildings belonging to it, and from the fact that it includes the major part of the most ancient remains in Burma.

"It is in most cases impossible to ascertain the exact age of these buildings, although it is possible that structures of this class were erected in Farther India as far back as King Asoka's time, namely, the middle of the third century B. C., as he is said to have sent missionaries to Thatôn and is

known to have been a very keen builder. We cannot, however, expect to find any remains of an earlier date, for even in India nothing has yet been discovered which can be placed further back with any degree of certainty.

"Burma is *par excellence* the country of pagodas; they are found everywhere and are still being erected from one end of the country to the other, of all sizes varying from a few feet in elevation to the colossal dimensions of the Shwe Dagôn Pagoda at Rangoon which rises to the noble height of about 370 feet.

"The word pagoda denotes the same class of buildings as are known in India as *topes* or *stupas*, namely, the relic shrines or solid masonry piles raised over relics of Gautama or some Buddhist saint. The word is in some instances misapplied to buildings not properly belonging to this class, *e.g.*, the Arakan *Pagoda* in Mandalay which contains the sacred Mahāmuni image and should, therefore, be more appropriately styled *temple*. Again the so-called Incomparable (*Atumashi*) *Pagoda* at Mandalay (now burnt) was not really a pagoda but a monastery or a *kyaung*.

"The true pagodas, solid *stupas*, are known as *zedis* by the Burmese.

"The common classification of *zedis* is as follows:—

"(1) *Datdaw-zedis*, or those containing relics of a Buddha or Rahanda.

"(2) *Paribawga-zedis*, or those containing implements or garments which have belonged to Buddhas or sacred personages.

"(3) *Dhamma-zedis*, or those containing books or texts.

"(4) *Udeiksa-zedis*, or those built from motives of piety and containing statues of Buddha or models of sacred buildings.

"The last two classes are by far the most numerous, as the erection of one of these shrines is accounted a work of the greatest possible merit, the pious builder gaining for himself the coveted title of a *payâtagâ*, and with it the assurance of future bliss and the approbation of his neighbours.

"Most of the Burmese pagodas are constructed of brickwork covered with stucco, though stone is also used, as in the case of the ancient laterite pagodas of Thatôn, but this is very rare, especially in modern examples. The outside is usually whitewashed, and in the case of the richer pagodas gilt, either the whole or only the spire. Gilding is quite a passion with the Burmese. Their most sacred pagodas, images, and *pôngyi kyaungs* are all richly gilt.

"The worshippers at the shrines are for ever plastering new gold-leaf over the old, until some of the more sacred images are thickly coated with it, much to the detriment of their features.

"It is interesting to note how pagodas gradually grew in size from a humble relic shrine to such noble monuments as the Shwe Dagôn Pagoda in Rangoon, for what we now see is by no means the original structure, but merely an outer shell of comparatively recent date, being the last of a number of pagodas, one built over the other. Probably the first pagoda, enshrining the original relics, was quite a humble structure of small dimensions and of a very different shape from the one we see now. A new and larger pagoda was erected over this, encasing the first, and the process repeated from time to time as long as pious persons came forward to meet the expense in order

to do further honour to the sacred relics. At each new addition more relics and treasure were usually deposited, and no doubt changes took place in the style of the buildings as time went on.

"The great Buddhist chronicles of Ceylon, the *Mahāwanso*, give a detailed description of the gradual erection of the great *dagaba* at Bintenne, near Kandy in Ceylon, which illustrates the way in which all these shrines have risen—'The chief of the Devas, Sumano, supplicated of the deity, 'worthy of offerings, for an offering. The Vanquisher, passing his hand 'over his head, bestowed on him a handful of his pure blue locks from the 'growing hair of the head. Receiving and depositing it in a superb golden 'casket, on the spot where the divine teacher had stood, he enshrined the 'lock in an emerald *dagaba* and bowed down in worship. The hero Sarabhu, 'at the demise of the Supreme Buddha, receiving at his funeral pile the 'thorax bone, brought and deposited it in that identical *dagaba*. This inspired personage caused a *dagaba* to be erected twelve cubits high to enshrine it and thereon departed. The younger brother of King Devenampiatisso (B. C. 259) having discovered this marvellous *dagaba*, constructed 'another encasing it, thirty cubits in height. King Duttagamini (B. C. 161), 'while residing there during his subjugation of the Malabars, constructed a '*dagaba*, encasing that one, eighty cubits in height,' thus completing the Mahiyangana *Dagaba*.

"It is this peculiar method of construction which makes it so difficult to study the development of pagoda building in Burma and to determine the original dates of erection of these monuments, for the oldest and most interesting remains are all hidden from view. It is only by breaking into the pagodas that we could really find out anything about them. This is of course impossible in the case of those which are still revered and tended by the people. But there are some ancient pagodas in out-of-the-way places which are quite neglected and where there would be no objection to exploration. At Pagān especially there is a great field for scientific investigation in this respect, and there can be no doubt that this would settle many obscure and disputed points in the ancient history of Burma.

"The modern Burmese pagoda is unquestionably the direct lineal descendant of the ancient Indian Buddhist *stupas* and through them of the sepulchral tumuli of the Indo-Chinese or Turanian races, although it now bears no resemblance to the low round mounds from which it originally sprang. We have, however, in India and Ceylon a fairly complete series of *topes* and *dagabas*, dating from the third century B. C. to about the time when Burmese architecture may be said to begin, with the rise of Pagān in the ninth century A. D.

"The chain is continued in Burma up to the present day and we can therefore follow the evolution of the pagoda through the immense period of over 2,000 years.

A few of the older forms of pagodas unmistakeably show their Indian origin, and in fact would hardly cause any surprise if met with in India. These older forms are much more massive and simple in outline. As time went on they became more elaborate and slender, so much so that one can generally fairly accurately judge of the modernness of a pagoda by the degree of attenuation it has attained.

The Shan pagodas are very much more slender in the spire than the Burmese. They retain the *hti*, or umbrella which the Siamese pagodas discard.

The modern pagodas are all so alike in general appearance that one description will nearly suffice for all.

They are slender conical piles, the chief peculiarity of which is the *inward* curvature of the contour on both sides. This form is opposed to the ordinarily accepted principles of the European æsthetics and makes the structures look very weak. The Greeks, our great masters in architecture, were specially careful to avoid anything like an inward curve, so much so that even the lines which they intended to look straight as, *e.g.*, the outlines of their columns and the horizontal lines of the entablature, were always given a slight outward bulge, though not generally perceptible to the eye.

The Sule Pagoda in Rangoon may be taken as an example of the weak contour, so characteristic of the modern pagoda. This will be at once apparent when it is compared with the simpler ancient form of the Kaunghmudaw Pagoda near Sagaing, so massive and powerful. It may be urged that the modern pagoda has gained in elegance what it has lost in grandeur; but the loss seems greater than the gain, and the result of all the excessive refining and elaborating is scarcely an improvement. In fact, the Burma Pagoda style is well advanced on the downward path of decline, and is doomed to die a natural death. Probably the superior fascinations of European art will prove too much for it and hasten its decay. In all parts of the world this has been the case and Italian art is everywhere supplanting the indigenous styles with which it has been brought into contact. Signs are not wanting to show that Burma will probably not escape this fate.

Siam has already adopted Italian models.

An Italian arcade forms the front of a shrine in the sacred precincts of the Shwemawdaw Pagoda in Pegu, while cast-iron columns, probably from Macfarlane's foundry in Glasgow, support the roof of some *tazaungs*.

The pagodas do not all exhibit that weak contour which I take to be a mark of a very modern date. The Shwe Zigôn Pagoda, near Pagān, for example, is of substantial bulk.

It would be very interesting to ascertain the exact date when these pagodas assumed their present shape. As already stated it is almost impossible to discover the date of first erection of the ancient pagodas, but the time of the last addition to the pile should not be difficult to determine and would be valuable as something definite to go upon.

All the larger pagodas stand on a wide open platform on which various objects and a number of buildings and sheds of different kinds are erected round the main structure, such as smaller pagodas; shrines or *tazaung-pyathats*, crowded with images of Buddha; rest-houses or *zayats* for the convenience of worshippers; altars for lights, incense and flowers; bells of all sizes; flag-staffs carrying metal work crowns or *htis*; sacred birds and *nats*; drinking water-stands or *ye-o-zins*, and so forth. All these numerous articles are placed there by pious donors who hope to gain merit

(*kutho*) by doing so. On the four sides of the pagoda, facing the cardinal points, porch-like image shrines are usually erected. The entrances are generally guarded by a couple of large grotesque lions, while the parapets, flanking the steps, are sometimes formed into the image of dragons with scaly bodies and tails.

"The pagoda itself can be usually divided into four distinct portions, all of which have their counterparts in the ancient Indian *stúpa*, from which they sprang, namely—

"(1) *A square masonry terrace*, on which are generally placed a ring of small pagodas surrounding the main one and taking the place of the ancient Buddhist rail. Steps ordinarily lead up to this terrace on the four sides. At the corners are frequently found the strange winged human-headed lions with double bodies known as *manussiha* or man-lion and recalling the ancient Assyrian winged lions. At Pegu there are two such terraces with a double ring of miniature pagodas.

"(2) *A high plinth* of a boldly moulded stepped contour, and generally of elaborate polygonal form in plan, reminding one of the outlines of Hindu temples.

"(3) *The bell-shaped* body of the pagoda divided into two portions by an ornamental band.

"(4) *The spire*, consisting of a number of rings; a lotus leaf band with a bead moulding in the centre and leaves above and below, pointing in opposite directions; a terminal carrot-shaped cone surmounted by the gilt metal-work crown or *hti*, indicating the sanctity of the building. The *hti* or umbrella is made of pierced iron-work, generally of beautiful design and richly gilt. It consists of several rings rising in diminishing stages and finished off with a long iron rod, the appearance being something like the Pope's tiara or triple crown. Small bells are usually hung to these rings which tinkle sweetly with every movement of the air.

"The portions (3) and (4) above are no doubt the modern representatives of the hemispherical body and masonry *hti* of the ancient *stúpa*. These are generally circular in form, an exception being the Sule Pagoda Rangoon, which is octagonal throughout.

II.—Monasteries or pôngyi kyaungs.

"Next to pagodas the monasteries or *pôngyi kyaungs* are the most numerous and characteristic buildings in Burma. Being, however, entirely constructed of wood-work they are neither of antiquity nor of special architectural value, for the material does not admit of the solidity and grandeur so essential to the higher class of architectural effect. Moreover the Burmese have fallen into the error of excessive and extravagant ornamentation, a fault which the use of a substance so easily carved would naturally lead them into. The result is that these buildings, though sometimes very pretty, are entirely lacking in dignity and repose, and leave a confused and unsatisfactory impression on the mind. One of the finest *pôngyi kyaungs* is that of the Queen Supyalat at Mandalay, properly called the Myadaung *kyaung*, which exhibits all the beauties as well as the defects



Photo-Block. Survey of India Offices, Calcutta, 1899.

KAREN MILITARY POLICEMAN AND RECRUIT.

of the style. The light pavilions with their profusion of gabled roofs and the graceful spire rising in diminishing stages make a very pleasing group of most picturesque outline, though somewhat bewildering to the eye from the wealth of ornamentation lavished on gables, ridges, eaves, finials, and balustrades.

"The *pôngyi kyaungs* are generally erected for the sake of quietude at a little distance from the lay buildings and, if possible, in the shade of a clump of trees. Every village has its little monastery, while the neighbourhood of the larger cities is crowded with them. The finest specimens were at Mandalay, but unfortunately many of them have been destroyed, particularly in the great fire of March 1892. They are never very large, being only intended to accommodate three or four monks or *pôngyis* with their superior or *saya*, besides a few novices and lay scholars. But several of these establishments are frequently placed in the same enclosure together with subsidiary buildings, such as galleries for walking exercise, shrines, or *tazaungs*, rest-houses or *zayats*, ordination halls or *theins*, canopied wells, and drinking stands (*ye-o-sins*).

"Each *pôngyi kyaung* consists of several wooden pavilions connected together and standing on an oblong wooden platform raised on teak posts some eight or ten feet above the ground, with a gallery and balustrade all round. A few flights of steps leading up to this platform and a low wall surrounding the whole form the only brick-work about the building; the rest is all of teak-wood. Huge posts made of entire trees support the roof, dividing the rooms into a centre portion with an aisle all round, the ceiling or the centre being higher and flat, while the surrounding aisles have a sloping ceiling at a lower level. The floors and roofs are boarded and the walls, partitions, and ceilings panelled. (See the plan above).

"Most *pôngyi kyaungs* are erected on a uniform plan with only four rooms, one containing a seated image of Buddha, another reserved as a state-room for the superior, a general living room for the *pôngyis*, and a school-room. Though outwardly presenting the appearance of several storeys, they are in reality never more than one storey high, as the Burman strongly objects to have anybody's feet over his head. The open pillared hall underneath is for this reason never utilized, except as a play-ground by the school-boys who have not yet arrived at any notions of personal dignity.

"The most characteristic feature of the *pôngyi kyaung* is the *pyathat* or many-storeyed spire, which, like the umbrella, was a mark of great distinction and religious sanctity. The *pyathat* has either three, five, or seven roofs according to the dignity of the building to which it is attached. It was only used for royal palaces and monasteries and occasionally, though rarely, in the private residences of a few of the highest officials by special permission of the King. [Shan *Sawbwas* were allowed a triple tier.] In addition to the carved ornaments the wooden buildings are frequently richly covered inside and out with red paint, lacquer, and gilding, as well as with tinsel work and a sort of coloured glass mosaic, reminding one of the Indian *shîsh* or mirror-work to be seen in the Shishmahals of Agra and Lahore. This gives them an appearance of barbaric splendour, which, however, even at its best, must have looked tawdry to the European eye.

"The wood carving which covers the buildings in such profusion is generally of superior execution and finish, and the figure carving of *nats*, *bilus*

and human beings, often very successful, in good proportion, and full of spirit and action. I may instance the group of figures surrounding the balustrade of the monastery near the court-house at Pagan, representing scenes from domestic life, and the remarkable figures of the 'four visions' of Buddha from the South Pagoda at Moulmein.

"In the finished *tazaung pyathats* it is ordinarily difficult to trace the structural features owing to the superabundance of ornamentation; sometimes the wooden forms above described are imitated in elaborate stucco. This class of brick buildings is not uncommon, and I need hardly say that it shows a great want of artistic taste to use the forms suitable to one material in another to which they are absolutely unsuited. The slightest touch will break off the elaborate plaster ornamentation and the building will soon be in a very dilapidated condition. This Burmese monastery style so strongly resembles that of the wooden temples of Nepaul that there can be little doubt of their having a common origin, and it is very probable that the general form and the character of some of the ornamentation is derived from Tibet; but we know so little of the buildings of that country that it is impossible to speak with certainty. [The lamasseries as a general rule are absolutely different in character from the *pôngyi kyaungs*.] Although all the monastic buildings in Burma are necessarily modern in date, still they are interesting, as they have probably carried on to some extent at least the traditional forms of the ancient wooden architecture which preceded the stone buildings of India, Assyria, and other countries, and should help us to realize the descriptions of the temple of Solomon built of the cedars of Lebanon and the ancient wooden palaces of Nineveh.

III.—Masonry temples of Pagan.

"In this class are included the large square brick temples, such as the *Ananda*, the *Thapinya*, the *Gandapalin*, and many more peculiar to Pagan, the characteristics of which have been so fully described by Colonel Yule in his *Mission to Ava in 1855*. They were constructed to contain large images of Buddha and rise up in gradually diminishing terraces finished off on top with a bulging spire, exactly like the *sikras* of Hindu or Jaina temples in Northern India. They are mostly large structures, some of which attain a height of nearly two hundred feet. The *Thapinya* has only one cell in the centre of the building right under the *sikra*, while the Ananda has four, with large standing images of the four Buddhas of the present world-cycle or *kalpa*, facing the cardinal points.

"The square temples of Pagan are almost unique in their way and are found scarcely anywhere else. We know nothing of the original sources from which their general design was derived, though some of the details are traceable to India and Ceylon. The bulging spire or *sikra* is apparently derived from Northern India and probably from Behar or Magadhadesa, which we know to have been in communication with Burma at that time.

"Temples, in the strict sense of the word, seem to have been rare in Buddhist countries, at least in earlier times. The only Buddhist structure of this kind still extant in India is the celebrated temple at Buddha Gaya, believed to be erected about A. D. 500, and a copy of which is to be found at Pagan. The adoration of the images of Buddha does not appear to have

been part of the original ceremonial, if we may judge from the fact that no representations of Buddha are found on the earliest extant Buddhist sculptures. It is very probable that the general use of images and subsequent erection of temples was not introduced till some time after the Christian era. At present, however, Burma abounds with images of Gautama, and Mandalay is a great place for their manufacture. They are ordinarily made of brass, alabaster, and wood, or in the case of larger ones, of brick and plaster.

"There are three kinds of Gautama images in Burma, of which the first is by far the most numerous, namely—

"(1) *Seated images*, called by the Burmese *tinbinkwe*, in which Gautama is represented sitting cross-legged with the left hand open on his lap and the right hand resting on his right knee and pointing downwards. This is the conventional attitude of Gautama sitting in meditation under the *Bodhi* tree (*Ficus religiosa*), when he attained to Buddhaship or supreme wisdom. The original of this class of images is probably the one which once stood in the temple at Buddha Gaya, a temple erected near the very *pipal* tree under which Buddha is said to have received his divine enlightenment. The oldest and most sacred of this class of images in Burma is the Mahamuni image in the Arakan temple near Mandalay, which is said to have been cast under Buddha's personal supervision.

"(2) *Standing images* called *mayattaw*, representing Buddha in the attitude of teaching with his right-hand raised, to which class the huge images in the Ananda temple belong. This class of images is far less common.

"(3) *Recumbent images*, known as *shinbinthayaung*, of the conventional attitude of Buddha at his death, when he attained to the blissful state of *Nirvana* or *Nĕkban*. In these images Gautama is shown resting on his right side, the head supported on the right hand, while the left arm is lying at full length on his left leg. An example of this is the colossal figure 181 feet long near Pegu. These images are also far from common.

"These are the only types of the modern figures of Gautama found in Burma, and the conventional attitude of these images never varies. The face is usually well formed, of a calm, dignified expression, especially in the older images; the quite modern ones have not unfrequently a disagreeable simpering cast of features. The lobes of the ears are long, reaching down to the shoulders in the modern specimens. The hair is tied in a knot on top of the head and represented in peculiar little curls or points all close together, and somewhat resembling the rough exterior of a jack-fruit. The images are of all sizes from a few inches high to the colossal dimensions of the brick figures at Pegu and elsewhere, the standing and seated images reaching a height of about ninety feet, while the colossal recumbent image just referred to is actually double that in length."

Mr. Oertel visited Mandalay too long after the annexation to see the palace as it existed in Burmese times. The plan as it was drawn in 1887 is appended. It is on a scale of two hundred feet to the

inch and shows the palace buildings as they were in November 1885. Details concerning the palace as it was in Burmese times will be found in another chapter. Mr. Oertel says: "The general arrange-"ment reminds one very much of the old Moghul palaces at Delhi "and Agra, with the Public Audience Hall or Diwan-i-am, standing "in a vast court where tournaments used to be held, and the pri-"vate part of the palace immediately behind, containing the Diwan-i-"khas, or Private Audience Hall, besides various garden and other "courts. Of course the style of the buildings is entirely different, "nor is the same amount of seclusion for the women's apartments "observed in Burma." Mr. Oertel points out that the plan of the whole palace square as it stood in the late King's time is of value because it throws light upon the probable arrangement of other royal palaces now in ruins. Detailed references with full descriptions and a larger scale plan would be required to be of real value. As is noted elsewhere, the City and Palace of Mandalay were built on ancient models and traditions, as well as to scale as with regard to the position and the number of the buildings.

It was only this adherence to ancient plans which prevented paltriness in the often changed capitals. There might have been new ideas, but it is more likely that, if the architects had not been guided by models, there would have been a great falling off in impressiveness, since new capitals were always built in a great hurry, like American towns: "Rome was not built in a day, but Chicago was."

Archæological study has as yet been only carried on fittully, at considerable intervals, by different persons and for only a short time. Most attention has been devoted to Pagān, but it seems probable that discoveries of greater value as regards the history of Burma are likely to be made at Tagaung, or Old Pagān, which can hardly be said to have been examined at all up to the present. It is there that the connection of Burma with India in the remote past will be finally settled, if it is to be settled at all.

Dr. A. Führer of the Archæological Survey of India visited Pagān in 1893, and from his report what follows is taken. Dr. Führer was, however, only for a very short time in Burma and what he writes is really a compilation from Yule's *Mission to Ava* and the notes left by the late Professor Forchhammer.

There is a great tendency to call Pagān a religious city and to compare it with Kieff, Mecca, and Benares, but it was no more a purely religious city than Ava or Amarapura. If Mandalay were abandoned, nothing of it would be left in a generation, but the pagodas. The characteristic is common to all Indo-Chinese cities.

Pagān is frequently compared to the Angkor Wat, north of the Tale Sap on the borders of Siam and Cambodia, and to the Borobodor, the great Buddhistic ruin in the Kadū district of Java.

The common story is that Anuruddha or Anawra-htā, the King of Pagān (whose classical name is Arimaddanapura), swept down on Thatôn (Saddhamma-nagara) in the year 1050A.D., and carried off everything, king, monks, sacred books, and the people, whom he employed to build temples at Pagān on the model of those which had existed in their old home. No remains whatever, or only of the most indistinguishable character, now exist at Thatôn, and this has led Mr. R. F. St. John to hazard the conjecture that the capital Anawra-hta sacked was not Thatôn but Champanagara, Angkor. It is, however, very certain that there is little or no resemblance between the Pagān temples and those at Angkor. Both palace and temples are much more Indian in character in the Chiampa capital. Boro-bodor is, however, more Buddhistic and has terraces and corridors like those of the Pagān temples, with scenes from the life of Sakya Muni and the Jātakas. The whole three may have the same inspiring spirit, but each has its individual character.

As if to prove that Pagān was really the capital of the country and not a mere holy town, there may still be traced the ramparts and gates of the walls which enclosed it. Near the Shwe San-daw also is to be seen a cromlech, or dolmen (figured in Yule's *Mission to Ava*), which may be a relic of the old serpent worship which the Burmese chronicler tell us prevailed till the time of Anawra-htā.

The pagodas or temples, however, out-number, as they have outlasted, everything. Nevertheless it is a mistake to say, as Dr. Führer quoting Forchhammer does, that "the history of Pagān is "essentially a history of religion. With the exception of Manuha's "(the captive King of Thatôn) palace there is not at present a "building left in Pagān that has not been erected in the service of "the most powerful Buddhist hierarchy that existed since the time "of Asoka." The monks were doubtless as respected, or perhaps more respected, than they are now, but they were not rulers; nor were they monks whose names, Anawra-htā, Kyanzittha, Narapatisithu, and Kyawzwa, live in the Ananda, Shwe-zigôn, Bodhipallin and Kyaukku temples. Forchhammer points out that—

"Pagān received hospitably the scattered remains of fugitive Buddhists from all parts of India. From the tenth to the thirteenth century it was the most celebrated centre for Buddhist religious life and learning in Indo-China. Fraternities from Ceylon (Sîhaldîpa), from the conquered Hamsavati (Pegu), from Siam (Ayuttaya), Kampoja (the Shan States), Nepal, and China sojourned in Pagān, and King Narapatijayasûra or Narapatisithu assigned to each fraternity or sect separate quarters where they were to reside.

"The Kyaukku temple, the northernmost point of historical Pagān, is situated in an almost unapproachable ravine, about one and a half miles north-east of the present town of Nyaung-u. On this desolate high plateau, intersected in all directions by deep gorges, lived the Burmese priests of the old school (Marammasamgha), after they had been excommunicated by the zealous Talaing priest Chapada, who had returned from Ceylon, where he had received the *upasampadâ* ordination from the priests of the Mahāvihāra. 'The Marammas' (Burmans), Chapada exclaimed, 'are indeed the 'lords of the country, and the Maramma priests have assumed lordship over 'the Church, but their ordination not having been performed in accordance 'with the precepts of the *Vinaya*, is not valid; it behoves not that we, the 'successors of Soma and Uttara, should hold communion with them.' Chapada and his followers then renounced community with the Pagān priests and formed a sect of their own in A.D.1182. Narapati Jayasura, King of Pagān, patronized this sect, and it attained to great influence and numerical strength at the capital. The high plateau, forming an arid, parched, and barren plain, whereon the Marammasamgha lived, is admirably adapted for abstract studies. There is nothing to prevent the mind from concentrating itself on metaphysics. Here is the cradle of Pali-Burmese literature, and the many interesting treatises written by the industrious monks who dwelt here in the eleventh and twelth centuries are, in point of learning, second to none in Buddhist literature."

Of these Forchhammer gives a list.

About two and a quarter miles to the south rise the slender spires of the Hngetpyittaung *kyaung*; near it are several artificial caves cut out of the soft sandstone rock, where Chapada and his followers retired; it is essentially the quarter of the Sinhalese sect or Sthalasamgha. South and east of the Shwe Zigôn pagoda resided the Purima Bhikkusamgha, or the Talaing fraternities, who differed from Chapada, inasmuch as they claimed the ordination service performed by them to be as valid as the Sinhalese, claiming an unbroken descent from the priests of Sona and Uttara. Chapada maintained that their priests' orders were invalid, as the *paramparâ* or hereditary succession of priests from the time of the two apostles to their day had been often interrupted. Such break in the succession requires a new ordination from a priestly community which has an unbroken *paramparâ*, and this he maintained the priests of the Mahāvihāra in Ceylon alone could claim. To the south of the Ananda resided the Kamboya and other *samghas*.

The oldest and most interesting temple of all the ancient historical buildings at Pagān is the Kyaukku Ôn-hmin. It is the original type of the edifices in Pagān called *katā kyaung*, "the monasteries or schools of Western Foreigners," Buddhist Indians apparently. Many facts that can be adduced point to the fact that Pagān, like her elder sister city Hastinapura on the Eravati, or the modern Tagaung, in the upper valley of the Irrawaddy, was built

almost exclusively by Indian architects. The Kyaukku temple, like the famous Mahāmuni shrine on the Sirigutta hill near the village of Parāgyi in Arakan, is undoubtedly a remnant of North-Indian Buddhism, which existed in Burma before the introduction of the Southern Buddhist school from Ceylon and Pegu. Buddhism, as it now prevails in Burma, is decidedly an offshoot of the Southern Buddhist School. In the tenth century the Buddhism established in Lower Burma by Soma and Uttara, who were sent by Asoka, must have become nearly extinct; in the eleventh and twelfth centuries the priests of Pagan united their church with the mother church of Ceylon. The Kyaukku temple is often mentioned in Pagān history. It was the refuge of fugitive priests, kings, and nobles long after the conquest of Pagān by the Chinese or Shans. But all mention of it ceases with the death of the renowned monk Ariyadhamma, who inhabited the cave temple till the year 998 B.E., or A.D. 1637.

The gorge which holds this shrine runs due east for half a mile, then bends to the north till it meets the Irrawaddy, the approach being difficult from all sides. The temple stands on an elevation, so that the base of the structure is a little above the high water mark; it has three distinct stories and lateral terraces all built against the south side of the gorge; the lowest story, with the exception of the upper tiers, which are of brick, is built of blocks of stone, a greenish fine-grained hard sandstone which is quite distinct from anything in the geological formation of Pagān or its neighbourhood and may have been brought from Popa hill. The blocks are well hewn and joined with mortar, closely fitting, but not polished, and the fine chisel marks are still plainly visible. Huge stone blocks form the approach to the central and only door. This portion of the building has suffered much from earthquakes. The sides have rents some of which extend from the base to the roof. Many have been repaired and filled with bricks made to fit into the rent, and the red streak of brick colour contrasts curiously with the tender green of the stone wall. The upper retreating stories are constructed of bricks and are partly built into the excavated side of the gorge, so that their weight rests only in part upon the sub-structure. The architectural style of these upper stories is not in unison with the lower, and they are no doubt later additions made by King Narapatisithu between A.D. 1187—92. The first two stories have no outer south façade, and are built on to the side of the gorge. The topmost story rises a little above the edge of the banks of the ravine.

A peculiar feature of Burmese architecture is the absence of true bearing. The wilder nations and tribes in Burma, uninfluenced by

Indian civilization, like to build their houses and shrines with the façade to the east or north, seldom to the west or south. The ancient structures at Pagān have a truer meridian than the more modern, which stand at all angles. A line meant to run from north to south has always a more or less pronounced inclination to the west or east, which owes its origin to the custom of the Burman to erect their walls in the line of the shadow drawn by their own body standing against the sun. The façade of the lowest story runs fifty-two feet due east and west, and has a height of forty feet. The central door is six feet wide and twelve feet high. The arch of the porch appears to have been semi-circular; at present only the western portion is preserved. Between the stones forming the arch and the outer stone façade and the topmost portion of the porch is a layer about a foot thick, of small-sized bricks laid horizontally, no doubt inserted to lighten the superincumbent weight of the arch. A beam of fossilized wood forms the architrave. The steps leading up to the entrance are immense plain stone slabs. About three feet from the ground a scroll of the "leaf and tongue" design, cut in low relief, runs along the three sides of the temple. On the face of the two sides of the porch, just above the lintel, is also a scroll, an ogre disgorging festoons of a "pearl" design. Above the porch a scroll of the same pattern runs round the three sides of the shrine; then follows a strip of moulding, ovolo and band. In the tier above, quadrangular equidistant holes perforate the walls. Beams of timber protrude from some of them, the fragments probably of rafters of a portico, protecting the entrance against the rain, as the sun never touches the façade. On each side of the entrance is a perforated window of peculiar structure and ornamentation. Both jambs of the central door are minutely carved, at the base on either side is the figure of a nude female and of two grotesque-looking males: one standing with the hands folded over the chest, the other sitting; both grin in silent delight with the eyelids lowered in bashful affection. The figures wear a profusion of hair. wavy and curly, very unlike the fashion of the modern Burmans. In the involutions of the arabesques above the female figure sits a royal personage in full court dress. Then follow griffins, ducks, peacocks, &c., all in low relief, in representation of phases of Gautama's past existences. Inside is a dark vaulted hall, with two immense plain stone pillars on each side supporting a groined ceiling. This hall measures forty-two feet from east to west and twenty-five feet from north to south. In the centre of the south side is a colossal stone image of Buddha, twenty-two feet high, in the usual sitting posture; the right shoulder is uncovered and the robe falls in graceful folds over the body and knees. The face

wears the usual aspect of contemplative repose. The eyes are half closed, the axis of the eyes horizontal. The nose is straight, the chin and jaw heavy and square; it is more an Aryan than a Mongoloid face. The figure rests on a throne, nine feet high, constructed of well-hewn stone slabs, set up in a succession of bars showing an outline of band, ovolo and astragal moulding. The north, east, and west sides of the walls of the interior have three equidistant rows of niches, one above the other, and seven to each row. They have a sharply pointed arch, but no ornamental designs. All appear to have contained stone sculptures of Indian workmanship; most of them have, however, been thrown out of the niches and lie in wild confusion on the floor. Most of the sculptures depict Gautama in the calm repose of *parinirvana*, with adoring monks above and laymen beneath, some in praying attitudes, others dancing. The walls have originally been coated with plaster; faint paintings and inscriptions appear here and there, all very much defaced. On the east corner of the south side of the hall a low narrow passage leads to the caves cut out of a coarse-grained sandstone. The entrance is a quadrangular frame-work of strong timber without any ornamental decoration; the passage is from four to six feet wide and from five to six feet high. It runs about a hundred and twenty feet round in an elliptic curve; the inner side is walled in with bricks, the outer is bare and without decoration; at regular intervals the passage opens into four small square chambers, six feet long and six feet high. At the west corner of the south side of the hall, another subterranean passage branches off for about sixty feet to the west, then it runs due south for about a hundred and twenty feet, with four lateral chambers at equal distances. It then follows a western direction for about thirty feet and then again a southern direction for about twenty feet. Here the cave has fallen in and further progress becomes impossible. The caves have now absolutely no light or ventilation; formerly they ran right through the hill and opened on the south side of it, thus admitting a current of air. There are not now any wall paintings, images, or inscriptions in the caves, but numerous votive clay tablets are lying in the cells, exhibiting Buddha sitting under a trefoil-headed *dagaba* and the Buddhist creed formula written in an ancient Pali alphabet, which resembles somewhat the Asoka characters.

No stairs lead up from the interior of the first to the second story; the only access is from outside. All other many-storied temples in Pagān have one or two interior staircases, and their absence in the Kyaukku temples seems to be almost conclusive of the upper stories being later additions. To the east of the temple the side of the gorge is perpendicular and ascent impossible.

On the western side a number of terraces have been built on to the temple and the precipice. They rise in regular succession, one above the other, from the base of the gorge to the summit; each has a low projecting parapet. They stand in no architectural unison to the main building, but were raised in the thirteenth century by the Pagān King Narasihapati to check the Chinese-Shan invasion from the north. The upper two stories, built entirely of brick, were erected by King Narapatisithu in the twelfth century; they are almost ruined, and what is left is of no architectural interest.

The Kyauk-ku temple is named from a huge stone (*kyauk*) which spans (*ku*) a deep gully in front of the entrance. The old classical name is lost. Forchhammer thinks that the lower story existed before the time of Anawra-hta.

There are many structures similar to the first story of the Kyauk-ku temple built in the plains of Pagān, huge square top-heavy buildings; but they are built of brick, have a different interior arrangement, few ornamental designs or sculptures, and stand free on all four sides; they all date from the twelfth century. There are only two other edifices in Pagān which have features in common with the curious first story of the Kyaukku temple. One is the palace of King Manuha, the last of the Thatôn Kings, whom Anawra-hta brought captive to Pagān in A. D. 1057; the other is the *Pitakataik*, or library, erected to receive "the five elephant-loads of palm-leaf manuscripts" which Anawra-hta brought with Manuha from Thatôn.

The palace of Manuha at Myinpagān is built of the same greenish sandstone as the Kyaukku temple, but the stones cover only ten inches of the exterior wall; the side facing the interior is brick, but the four pillars supporting the roof of the central chamber, the throne room, are stone, and exhibit minute carving in keeping with that of the Kyaukku temple. The palace has also perforated windows with ornamental designs similar to those in the Kyaukku-ônhmin. The architectural structure of the *Pitakataik* differs in many respects, but there are the same sandstone windows with like designs. The Nagayôn pagoda, which was built before the Ananda in B. E. 418 (A. D. 1056) already substitutes bricks for stone in the apertures, laid in a fashion to form cross-shaped loop-holes. In later structures the perforated windows entirely disappear and nothing but the frame-work is left. The condensed details of ornamentation and architecture of the oldest edifices in Pagān gradually changed to the inane coarse platitudes of the Thatbyinnyu pagoda, built in B. E. 503 (A. D. 1134), by King Alaungsithu, grand as an imposing mass of brick-work and mortar, white-washed

walls, clumsy, snub-nosed, short-necked, and *grosse tête* images of Gautama Buddha of Shan extraction. The delicate details of architectural structure, exhibited in the Kyaukku temple, Manuha's palace, and the Pitakataik, disappear in the gigantic expansion of Kyansittha's and Narapatisithu's temples.

On the plateau stretching to the south of the Kyaukku temple stand several smaller pagodas, all in ruins except one, about a hundred feet to the south-east of the main building. It is of the "mitre" type and measures thirty-two feet from west to east and twenty-two feet from north to south. The shrine erected by the hapless Kyawzwa, the last King of Pagān, before it was parcelled out among a number of Shan adventurers, was built in close imitation of the small ancient Kuzeit pagoda, erected by King Kyansittha in A. D. 1069. Like most pagodas of this style, the flamboyant spire rises right over the principal chamber containing the image. At the height of sixteen feet, the inner four walls of the image-chamber begin to incline towards each other and meet in an apex at the height of twenty feet. The walls are covered with plaster and painted all over with scrolls, festoons, arabesques, and bands of "pearl" design holding entwined seated Buddhas, animals, chiefly griffins, ducks, peacocks, and hares. The walls of the antechamber are divided into small fields, two inches by two and a half, depicting in black, episodes from the *Jâtakâs* in illustration of the many phases through which Gautama had to pass. In front of the passage which leads from the anteroom to the image-chamber are pilasters with pedestals and capitals, and above the vaulted arch rise, in plaster work, the usual spire and flamboyant ornamentation. The ceiling of the passage is divided into diagonal squares, painted in black and white lines on a background of light amber colour, with lateral band of arabesque design. The entrance is from the east and has a pointed arch, the ceiling of the anteroom is vaulted; all surfaces are covered with ornamental designs in blue, white, yellow, and black. The exterior is partly covered with plaster, showing the usual ogre heads, scrolls, and other designs. An inscribed stone slab lies in front of the entrance, but the letters are entirely defaced. There are four other small pagodas in a straight line from north to south at a distance of about a hundred feet from each other. The first of them has also an inscribed stone, but the characters are likewise obliterated. About five hundred yards further due south is a large tank walled in with bricks. It was dug by order of King Narapatisithu in B. E. 550 or A. D. 1187.

Opposite the Kyaukku temple, to the north, on the edge of a deep ravine, are the ruins of two brick pagodas, called Kyidawmu-

paya, *i.e.*, pagodas of the royal vista, built by King Narapatisithu between the years 550—555 B.E. or A.D. 1187—1192. The Queen and her sister often accompanied the King on his visits to the Kyaukku-ônhmin, but as the rules of monastic discipline forbade the presence of womankind within the precincts of a monk's dwelling, they were not allowed to enter the shrine, and the King had the pagodas and *zayats* built here, so that they might have a full view of the wonderful temple opposite and rest while he visited the shrine and the priests. A short distance to the north of it and close to the river-bank, on a cliff about a hundred and forty feet high, is the Paungdaw-u pagoda, in a state of total ruin. The base is square, fifteen feet to each side; the rest appears to have been circular and massive. History asserts that King Narapatisithu visited the Kyaukku temple in his royal boat; and in commemoration of his visit he had this pagoda built over the place where his boat was moored. Close to this pagoda, in the soft sandstone cliff overlooking the river, are five artificial caves inhabited by monks. Behind these caves, across a deep gorge, rise the slender spires of the Shwêthabeik pagodas, *i.e.*, the temple of the golden alms-bowl.

About a mile west of Nyaung-u stands the Shwê Zigôn pagoda, neither so large nor so well built as the pagodas at Rangoon or Pegu. The height does not exceed a hundred and fifty feet. It is surrounded by a spacious court-yard paved with broad stone flags, on which there are a number of lesser buildings profusely gilt and elaborately carved. A staircase on the outside leads up to a gallery, about a third of the height of the principal temple, from whence an extensive view of the surrounding country, studded with the crumbling ruins of innumerable religious buildings, is to be obtained. Round the square base of the Shwê Zigôn are a number of glazed terra-cotta panels with bas-reliefs let into the brickwork; they represent different scenes in the life of Gautama taken from the *Jâtakâs*, and as these encaustic tiles are inscribed, they are of considerable archæological value. According to an inscribed stone slab, standing in the courtyard, the first pagoda was built by King Kyansittha in B. E. 457 or A. D. 1094; in B. E. 527 (A. D. 1164) a second pagoda was built over the first; and according to the popular belief the space between these two pagodas is filled with treasure. In the courtyard stand twenty-two inscribed stone slabs, recording various donations to the principal temples made in B. E. 559, 595, 610, 643, 646, 718, 727, 737, 743, 751, 754, 757, and 813, or between A. D. 1196 and 1440.

"The remaining religious edifices differ in structure from those generally met with in Lower Burma; instead of a slender spire rising

to a great height from an expanded base, the square brick temples of Pagān carry up a heavy breadth in gradually diminishing terraces to very near the top, and then finish off abruptly in a curvilinear spire, which gives a clumsy appearance to the buildings. Most of these ancient temples are not solid at the bottom; a well-arched dome supports a ponderous superstructure. Within an image of Gautama sits enshrined, and four Gothic doorways open into the domed chamber. The most remarkable of these temples is the celebrated Ananda, built by Indian masons under King Anawra-hta in B. E. 421, or A. D. 1051. In plan it is a square of nearly two hundred feet to the side with projecting porticos on each face, so that it measures two hundred and eighty feet across each way. Like all the great pagodas in the city it rises in seven diminishing terraces to a height of about hundred and eighty-three feet. Internally the building is extremely solid, intersected by two narrow concentric corridors; but in the rear of each of the four projecting transepts is a niche, or chapel, cunningly lighted from above, in which is a colossal standing figure, about forty feet high, of each of the four Buddhas of the present *kalpa*, covered with gold leaf. In the narrow corridors are about a thousand niches containing small stone sculptures of apparently Indian workmanship, representing the different phases in the life of Gautama Buddha.

Similar to the Ananda both in design and in plan is the Shinbinthayaung built by King Manuha of Thatôn in B. E. 401, or A. D. 1239. There are four apartments or chapels. In three of these are cross-legged sitting images, whilst in the fourth is a recumbent figure of Gautama Buddha, about ninety feet in length. In front of the building is a colossal stone alms-bowl, about nine feet in height.

The Damayangyi, built in B. E. 530, or A. D. 1168, by King Narapati, is quite equal in dimensions to the Ananda, but differs in plan and design. In the centre are two chapels, one above the other, and on either face are four small chapels, all containing the usual figure of Gautama.

The Sulamani (Chûlamani), built in 545 by King Narapatisithu, possesses lofty parallel corridors, covered with allegorical paintings, round the building on each story.

The Godopallin built in B. E. 550 by Nandaung-nya, son and successor of Narapatisithu, contains three chapels on the ground floor and one above in the centre; lofty arched corridors surround the edifice on each story.

The Thatbyinnyu, built in B. E. 503 by Alaungsithu, is very similar to the Ananda both in dimensions and in plan, except that

it has only one statue instead of four, standing back to back. Its height is about two hundred feet, and it is the highest in Pagān.

The Bodipallin, erected in 580 by Zeyatheinga, is constructed on the same plan as the Bôdibin temple at Bodhigaya, but is much smaller. [We know from a Burmese stone inscription at Bodhigaya itself that the temple there was repaired about 1100 A. D. at the instance of the Burmese King of Pagān.]

The Thitsawadi pagoda, built in 446 B. E. or A. D. 1084 by Queen Pwasaw, the wife of King Tayôkpyemin, has four chapels at the base connected by parallel corridors. In each there is a sitting figure of Gautama; the building consists of three stories: on the second story there is one central chamber, in which are four colossal figures of Buddha sitting back to back; on the third story is a small empty chamber. In the courtyard are five inscribed stone slabs, dated B. E. 446, 457, 532, 758, and 804, or between A. D. 1081 and 1442. The inscription of B. E. 804 contains an interesting list of works, belonging to the Buddhist canon, which were translated from the Buddhist Pali and Sanskrit into Burmese by the Monk Dhamma Pāla.

The most important discoveries as yet made at Pagān are two long Sanskrit inscriptions on two red sandstone slabs now lying in the courtyard of the ancient Kuzeit pagoda. The oldest is dated Gupta Samvat 163, or A. D. 481, recording the erection of a temple by Sugata or Rudrasena, the ruler of Arimaddanapura. The second record is written in characters of the North Indian alphabet and dated in Saka Samvat 532, or A. D. 610; its object is to record the presentation of a statue of Sakyamuni by two Sakya mendicants named Bodhivarman and Dharmadāsa, natives of Hastinapura on the Eravati (the modern Tagaung in Upper Burma), to the Asokarama at Arimaddanapura, during the reign of King Adityasēna. Undoubted proof is here afforded that Northern Buddhism reached Upper Burma from the Ganges when India was mainly Buddhistic. The remaining inscriptions at Pagān are all written in the square Pali alphabet, and what a vast field for epigraphical research is open here to the student may be judged from the following list of inscribed slabs, namely, (1) at Wetkyi-in: twelve slabs, dated B. E. 532, 552, 585, 591, 592, 593, 654, 758, 770, 777, 778, and 804; (2) at Hngetpyittaung: eleven slabs, dated B. E. 577, 598, 599, 605, 617, 621, and 661; (3) at Siripachchaya: two slabs, dated B. E. 592; (4) at Chauk Pala: four slabs, dated B. E. 550 and 632; (5) at Thamati: seven slabs, dated B. E. 621, 627, 631, 661, 663, 664, and 696; (6) at Ledaunggan: thirty-seven slabs, dated B. E. 552, 571, 576, 584, 585, 586, 587, 588, 589, 591, 595, 600, 604, 610, 626, 628, 630,

631, 633, 636, 638, 639, 646, 651, 653, 704, 737, and 752; (7) at Myin Pagan: eight slabs, dated B. E. 446, 490, 553, 592, and 654; (8) to the north-east of Pagān: eight slabs, dated B. E. 569, 578, 599, 605, 617, 621, and 661; (9) to the east of Pagān: ten slabs, dated B. E. 541; (10) within the city walls: twenty-six slabs, dated B. E. 503, 550, 558, 566, 570 573, 575, 589, 593, 597, 598, 599, 600, 604, 609, 610, 620, 622, 754, and 923; (11) to the south of Pagān: three slabs, dated B. E. 603, 636, and 663."

A few of the temples and pagodas at Pagān are still looked after by the people of the neighbourhood, but there are hundreds of them completely neglected and all more or less ruined. Time has done much to bring about the decay of these brick buildings, but treasure hunters have done more. An advantage of the excavations, however, is that they show the character and shape of the earlier pagodas afterwards built over.

There are many traces of the earlier serpent-worship which Anawra-hta put an end to. Between the two huge leogryphs, which form the propylæa to the Shwe Zigôn pagoda, there is a rude stone image of a serpent, and legends state that a *nagā* raised the hillock on which the pagoda stands from the bed of the Irrawaddy. Near this pagoda also are the shrines to the thirty-seven *nats* of the Burmese, elsewhere described. Mr. Oertel notices that there is at Thatôn another spirit temple with an image of the *nat* Popo, represented as a grey-bearded old man. He adds: "there are "some interesting terra-cotta tiles with bas-reliefs, let into panels, "round the square terraces on which the Shwe Zigôn pagoda stands. "The heavy gilding, however, makes it difficult to trace the scenes "on them. But there is another large pagoda, the name of which "I have not noted, about a mile beyond the Ananda temple, which "has a very fine set of these terra-cotta tiles. They are of red "burnt clay, about two feet square, and covered with groups of "very well executed figures in low relief, some representing different "scenes from Buddhist legends and mythology, while others show "distinct traces of tree, serpent, and fire-worship; but their chief "value lies in their having all inscriptions which will probably enable "the subjects to be identified."

It would be very interesting if some account of these bas-reliefs could be published in the same way as has been done for the Bharhut and Sanchi sculptures in India, as they probably contain valuable records of the early Buddhism of Burma, and the spirit and serpent worships supplanted by it. Similar terra-cotta tablets are found adorning the square terraces of the Thagya Pagoda at Thatôn, from which these Pagan tiles have no doubt been copied.

Stamped bricks of the same kind have also been found among the ruins of Tagaung, with Buddhist images and ancient inscriptions in the Gupta character of the first two centuries of the Christian era. Archæological research has practically ceased since the death of Professor Forchhammer. His work, which had little more than begun, is thus summarized in the Administration Report for 1888-89. " The Pagān of the hills, as distinguished from the town on the "river bank, consists of a number of curiously constructed shrines, " built against the steep sides of ravines, and an almost interminable " labyrinth of artificial caves, perforating the low hills for miles in " all directions, and even extending to the bank of the Irrawaddy. " These caves were at one time the abode of Buddhist monks. Many " contain images of Buddha, inscriptions, and wall-paintings. Both " caves and cave temples are older, and in many cases, from an " architectural standpoint, more interesting than the shrines erected " by Anawra-hta, Kyan-sittha, and Narapatisithu. The bell and stone " inscriptions are mostly in Burmese, but some are in Môn and many " in Pāli. Nearly five hundred of the inscribed stones from Pagān " and all parts of the Burmese empire were gathered together near " the Mahāmuni pagoda between Amarapura and Mandalay by " order of King Bodaw Payā towards the end of last century. The " square stone pillars in the Myazedi have on one side a Pāli inscrip- " tion, on the second an inscription in Burmese, on the third in Môn, " and on the fourth a long legend in an unrecorded alphabet and " language. Inscriptions have been deciphered ranging from B.E. " 420 (A.D. 1059) to the close of last century. The stone pillars " which stand near the entrance of the Pagān Shwe Zigôn pagoda " may be older, because they stood originally in Thatôn, the capital " of Manuha. Many of the clay tablets have legends of unknown " date in Cambojan, Môn, Burmese, and Nagari characters.

" The temples and monasteries are all built of bricks; but the " Nagayôn, Dhammayôn, and Kubyaukgyi pagodas have stone slabs " inserted at regular intervals above the radiant or pointed arches of " the entrances to give more stability to them. Only Manuha's " palace and the Kyaukku temple are constructed of sandstone. In " the former the interior pillars exhibit in relief the effigy of Trimurti. " The huge temples of the eleventh and twelfth centuries, such as " the Thatyinyu, Ananda, Dhammayôn, and Sulamani, appear to be " gigantic expansions of the older but smaller temples to the east of " Pagān. The latter show far more condensed architectural and " ornamental details. The structures of Pagān may be broadly di- " vided into the following groups:—

" (1) A pyramid, octagonal, square, or circular at the base; " solid brick-work throughout, no interior, often with

"lateral flights of stairs up to the *garbha* or bell. The "Lawkānanda and Shwe Zigôn pagodas are typical "examples of this class.

"(2) Temples with well-developed interiors, with a central "chamber, over which rises the spire, which is either a "circular pyramid or a quadrangular mitre. Of this class "the many-storied Thatpinyu and the Gubyaukgyi "temples are examples.

"(3) Temples with interior galleries and ante-chambers on "the four sides, with corresponding entrances from "without. The centre is a massive square (usually with "an image of Buddha on each side) rising from the base "to the ceiling and supporting the culminating circular "or square spire above.

"(4) Massive circular bells standing on a low quadrangular "base; they are built in imitation of similar shrines in "Amiruddha in Ceylon; in Pagān they are still called "Sinhalese pagodas.

"(5) The *Rahankyaungs*, or monasteries, are square, clumsy, "top-heavy buildings; a chamber for the prior occupies "the centre; a spacious gallery leads round; the monas-"tery is usually one-storied, but has passages through "the thick exterior walls, often two or three, one above "the other, with perforated stone slabs as windows; their "prototype is the next, namely—

"(6) The subterranean monastery, the intermediate stage "between the original cave labyrinths in the hills to the "east and the monasteries just described. A square "hole was dug in the ground, forty to sixty feet long and "thirty to forty feet deep. The sides were walled in "with bricks; at the bottom of the excavation are en-"trances to intricate subterranean passages and caves. "The opening of the hole is on a level with the surround-"ing ground."

The images of Pagān are for the most part representations of Buddha and they form a very curious subject of enquiry. In Manuha's palace Trimurti reigns supreme, the inseparable unity of the three gods Brahma, Vishnu, and Siva in one person. Separate altars of Vishnu and Siva are also met with, not only in the temple of the Hindu masons west of the Thatpinyu pagoda, but also on the Buddhist Shwe Zigôn, Nagayôn, and the smaller temples of Chaukpalla. A knowledge of the occult art of old Indian cheiro-mancy would be necessary to interpret the curious signs engraved

on the tips of the figures and the palm of the Buddha's hand in old Môn stone images. Brick statues a hundred feet high are often met with. Some of the clay tablets exhibit very neatly impressed representations of Buddha and interesting events of his life. The wooden carved images of Pagān Kings in the Kyaukku temple are of particular interest. The pantheon of the thirty-seven *nats* represented on the Shwe Zigôn pagoda and treated of in the chapter on spirits is the only one of its kind in Burma. Specimens of rich ornamental carving in stone and wood, especially on the perforated stone windows, are very numerous. The painting on the walls of the Gubyaukgyi, Kozeik, and other older shrines disclose an art now lost to the Burmese.

Dr. Führer in his archæological report for the year 1894 gives the following details about the pagodas of Ava, Sagaing, Mandalay, and other places, to which he paid hurried visits :—

"Ava, or Inwa, situated on the left bank of the Irrawaddy in the district of Sagaing, was the capital of Burma for nearly five centuries. Its classical name was Ratanapura or Ratnapura and *Shwewa*, the "Golden entrance," in the language of poetry and song. Ava, through its antiquity as the capital of Burma, is better known among the neighbouring nations than Shwebo, Sagaing, Amarapura, or Mandalay. Even up to 1885, the seat of Burmese Government was known to the Chinese as Awa, and the Shans called the Burmese King Hkunhawhkam Angwa, *i.e.*, the Lord of the Golden Palace of Awa. The city was founded by King Thadominbya in A.D. 1364, its site being selected for its strategical position at the confluence of the Myitngè and Irrawaddy rivers and for the swampy nature of the ground on its open face.

"This deserted capital is divided into an upper and lower fortified city. The lower, which is the more extensive, is a square of about four miles in circumference. It is protected by a rampart thirty feet high, at the foot of which there is a deep and broad moat. The upper city or citadel, which did not exceed a mile in circuit, was much stronger and more compact than the lower, but neither the lower nor the upper city had a ditch on the river-side. The fortification walls are now mouldering into decay; ivy clings to the sides, and trees and shrubs undermine the foundations. Amidst heaps of rubbish overgrown by weeds and thorns, the traces of the separate divisions of the royal palace (*nandaw*), the great council hall (*yôndaw*), the apartments of the ladies, and of the seven-storied imperial spire (*shwe pyathat*) are still visible. Amongst the religious buildings within the lower fort, Shwekugyi Pagoda, in no way distinguished for size or splendour, was in former times held peculiarly sacred, and is still reverenced above the rest. When an officer of rank was about to enter on a great public trust, or a new commander was appointed to the army, the oath of allegiance was administered in this temple with great solemnity. According to an inscribed stone slab, lying on the platform, the pagoda was built in B.E. 872 or A.D. 1510. A short distance to the westward of the upper fort stands the Laukatharapu Paya, formerly the residence of the *Sayadaw*, or *Thathanabaing*, the Buddhist Archbishop of the Empire, built in B.E. 754 or

A.D. 1392, by King Thadominbya. The area on which the temple stands is a square surrounded by an arcade of masonry; on each side nine cubica towers are erected, and several buildings are comprehended within the space enclosed by the arcade. The pagoda differs from the usual pyramidal structures by having an arched image chamber in the centre of its base. On entering this dome, a colossal seated image of Gautama is seen, about twenty-four feet high, hewn out of a solid block of white marble. The building had evidently been raised over this ponderous mass of marble, as the entrance would scarcely now admit the introduction of the head, which is eight feet in diameter. Close by is a lofty brick monastery built in B.E. 1085, or A.D. 1723, by the Chief Queen of King Siharaja of Ava. The structure rests on a brick terrace and is not elevated on pillars as wooden *pôngyi kyaungs* usually are. The roofs, rising one above the other in five distinct stories, diminish in size as they advance in height, each roof being surrounded by a cornice curiously carved in stucco. The three uppermost stories contain handsome halls, surrounded by wide galleries. Outer staircases, fantastically shaped into various grotesque figures, lead up to the different stories. Ava possesses now only nine inscribed stone slabs, dated respectively in B. E. 754, 790, 872, 1139, 1140, 1184, 1185, 1208, and 1245, or between A. D. 1392 and 1883.

"Sagaing, whose classical name was Jeyapura, was the seat of the Burmese Government under King Naungdawgyi from A. D. 1760 to 1764.

"Sagaing became, at the end of the last century, a place of religious resort from the number of pagodas erected in its neighbourhood, as well as on account of the manufacture of images of Buddha, which are sculptured here of fine alabaster hewn out of the quarry at Myingaung, about twelve miles distant.

"The fortified city was built on the same plan as ancient Ava, although it was not equal in extent to the fortifications of that capital. The defences, however, were suffered to fall into ruin soon after Naungdawgyi's death. Of the numerous pagodas only very few are worthy of particular notice. The Sinbyuyin pagoda is surrounded by a high brick wall, from which elephants' heads, formed of masonry, protrude in such a manner as to give the wall the appearance of being supported on the backs of those animals. [This served as a model for the pagoda built by the Burmese at Muang Nan in the Siamese Shan States]. The pagoda itself is a solid pyramid of brick, about one hundred and twenty feet high, and was built in B. E. 721 or A. D. 1359. The ruined Shwe Zigôn pagoda, built in B. E. 727, is of special interest, as it consisted of three concentric terraces or procession paths surmounted by a dome. The lowest terrace contains a series of inscribed green glazed clay tablets impressed with bas-reliefs exhibiting scenes from the *Jātakās*. In the neighbourhood of this temple are buried in dense jungle ten large inscribed stone slabs, dated respectively in B. E. 730, 731, 737, 747, 749, 755, 774, 793, 873, and 1187. The inscription of 793 was composed by Ariyadhajathêra, the learned monk of Sagaing, who instructed at Ava Dhammadhara, better known as King Rāmādhapati of Pegu. About five miles to the north-west of Sagaing is the celebrated Kaunghmudaw pagoda, 'Royal work of merit,' or Rajachūdāmani.

It is composed of solid masonry, and in shape resembles the ancient hemispherical *stûpas* of India. It stands on three concentric bases each

wider than the other; the circumference of the lower base is about one thousand and fifty feet, and the height does not appear to be less than three hundred feet. The dome ends in a clumsy cone unadorned by a spire or the usual *hti*.

"The roof of the dome was once richly gilded, and the remains of wooden gilded galleries, which no doubt surrounded the procession paths of the three terraces, are lying scattered about in the court-yard. About twelve feet distant from the lowest base there is a high stone railing consisting of about seven hundred and eighty-four white marble pillars divided into four quadrants by four stone gateways. The Kaunghmudaw was once celebrated throughout Indo-China for its sanctity, and it is still held in great reverence. The Burmans boast of the high antiquity of this edifice; they ascribe its rise to supernatural agency; but there is a large inscribed marble slab in the court-yard according to which the temple was built in B. E. 998, or A. D. 1636, by King Thalunmintayagyi of Ava (*vide* also *sub voc.* Kaunghmu-daw).

About five miles north-east of Ava, on the left bank of the Irrawaddy, there is a deep and extensive lake, called Taungthaman, formed by the influx of the river during the rains through a narrow channel, which afterwards expands and displays a sheet of water, about one and a half miles broad and seven miles long. This lake first takes a northerly direction, nearly parallel with the river; it afterwards curves to the south-east in a lessening sheet and diminishes into a morass. When filled by the periodical rains, the lake with the river on one side encloses a dry and healthy peninsula, on which King Sinbyuyin or Bodawpaya, the fourth son of Alaungpaya, founded the new city of Amarapura in A. D. 1782.

"Of the many religious buildings in Amarapura now crumbling into ruins the only noteworthy are the Shinbinkugyi pagoda, built in A. D. 1794, by the heir-apparent and only son of King Bodawpaya, and the Patowdawgyi, which is the largest and most handsome of all modern pagodas in Upper Burma. It consists of five successive square terraces, surmounted by the immensely elongated pile of the pagoda, and was built in B. E. 1180 or A. D. 1818 by King Bagyidaw, as recorded on a large marble slab standing in the court-yard. White marble panels with inscribed bas-reliefs are let into the three lowest terraces. They illustrate partly humorous grotesque scenes and partly stories from the *Jātakās*. To the south of the Taungthaman lake there is a colossal sitting image of Gautama, known as Mahasakyavansa, which was built of brick by Pagān Min in B. E. 1211 or A. D. 1849.

"About three miles to the north of the fort of Amarapura stands the celebrated Mahamuni shrine, known to Europeans by the name of Arakan pagoda, containing the Chandrasara image of Gautama Buddha, made of polished brass, about ten feet high, and sitting in the usual posture on a lotus throne within an arched recess. This image is believed to have been cast on the Sirigutta hill by King Chandrasuriya of Dhannavati in North Arakan, and to be the original resemblance, or 'younger brother,' of Gautama Buddha taken from life.

"The Kings of Pagan, Prome, Pegu, and Ava invaded Arakan from the earliest times, with no other intention than to obtain possession of this sacred image of Gautama.

"In the court-yard stand five gigantic bronze images of elephants and men, unfortunately much broken, which are the guardians of the shrine. These images, as a well as a few ponderous inscribed cannons measuring thirty feet in length and two and a half feet in diameter at the mouth, found in the arsenal of King Thibaw, formed part of the spoils of Arakan. In two long galleries adjoining the Mahamuni shrine on the south side are collected about 750 inscribed stone slabs which were brought, by order of King Mindon Min, from Ava, Pinya, Sagaing, Pagan, Pegu, Prome, &c. They range in dates from B. E. 108 to B. E. 1201 or between A. D. 746 and 1839, and many of them are of great historical importance.

Tagaung, a deserted site on the left bank of the Irrawaddy in the district of Katha, hides under its *débris* the oldest Indian settlement in the whole of Burma. In the *Mahayazawin* it is stated that Dhajarâja, a king of the Sâkya race, settled at Manipûra about the middle of the sixth century B. C., and that Upper Pagān, or Tagaung, was conquered by him. He married Nagachinna, the Queen of Bhinnaka, the last of the Tagaung Kings, who on his expulsion by the Tartars fled to Male and died there. On the destruction of the Tagaung dynasty the people were divided into three divisions; one emigrated to the Shan States; the second to the country of the Pyus and Kaurans, over which Muduchitta, son of Kanrâjâgyi, had formerly ruled as king, and the third remained at Male with Nagachinna. The discovery amongst the ruins of Tagaung of terra-cotta tablets, bearing Sanskrit legends in Gupta characters, and of a large stone slab with a Sanskrit record in the Gupta alphabet of Samvat 108, or A. D. 416, affords a welcome corroboration to the statement of the native historians that, long before Anawrahta's conquest of Thatôn in the eleventh century A. D., successive waves of emigration from Gangetic India had passed through Manipûra to the upper valley of the Irrawaddy, and that thesee migrants brought with them letters, religion, and other elements of civilization. The inscription is one of Mahârâjâdhirâja Jayapala of Hastinapura in Brahmadesa on the Eravati, and the object of it is to record in Samvat 108 the grant of an allotment of land and a sum of money to the *Arya Samgha*, or the community of the faithful, at the great *Vihâra*, or Buddhist convent of Mahâkâsyapa, for the purpose of feeding *bhikshus* or mendicants, and maintaining lamps at the *stûpa* in the neighbourhood. The chief interest attaching to this inscription consists in its mentioning five lineal descendants of the Lunar dynasty (*Chandravamsa*) of New Hastinapura, namely Gopâla, Chandrapâla, Deupâla, Bhîmapâla, and Jayapâla, and in its mentioning that Gopâla left his original home, Hastinapura, on the Ganges, and after various successful wars with the *Mlechchhas*, founded New Hastinapura on the Irrawaddy. The vast ruins of Buddhistic Hastinapura are now buried in dense jungle, and would no doubt, on excavation, reveal the remains of buildings raised by Indian architects and embellished by Indian sculptors. Undoubtedly valuable inscriptions would be unearthed which might throw new light upon many dark points in the earliest history of India and Burma and upon a civilization that appeared when new Pagān was founded, but then steadily declined. There are a few solid circular brick pagodas to the south-east and west of ancient Tagaung, namely, the Shwê Zigôn, Shwê Zati, and Paungdawkya, which are held in great reverence and no doubt are very ancient; they were repaired during the reign of Alaungpaya, as is recorded on three marble slabs.

"Bhamo or Man Maw, on the left bank of the Irrawaddy, possesses in the Theindawgyi pagoda a very interesting building, being an immensely elongated *stûpa*. The upright post of this pagoda rises gradually in the form of the *sikhara* of a Hindu temple, and the top is crowned with a rounded domical shape, the nearest approach to it in structure being the pagodas at Ayuttaya in Siam. [This is the ordinary type of pagoda all over the Shan States. The resemblance to the Ayuthia pagodas is rather remote and Siamese pagodas or temples have no *htis*.] From an inscribed stone slab it appears that the pagoda was erected in B. E. 749, or A. D. 1387, and that the classical name of Bhamo was Chinarattha. A short distance to the north of Bhamo are the ruins of Sampanago, and about sixteen miles east the remains of the old town of Kôktha, the rival of Sampanago in its flourishing days. Practically no over-ground traces of these important cities are left, but digging might furnish historical facts. Near Myothit up the Taping are the ruins of an old town which might be identified with old Man Maw. On the Kyandaw island, in the middle of the Irrrawaddy opposite Shwegu, there is an interesting pagoda, called Shwebawkyan Payā, said to contain relics of the forehead of Gautama Buddha. The son of the Chinese would-be Emperor Yang-hli is buried here, and there are several queer old legends about the spot. At the foot of the big cliff in the second defile of the Irrawaddy is an interesting little pagoda called Letsaunggan Payā. Old Kaungtôn below Sawadi will no doubt yield interesting relics on excavation.

"About eighteen miles to the south of Bhamo, on one of the lowest slopes of the Wunbutaung hill, above the village of Sawchaungbya, is an old Chin cemetery containing five more or less perfect stone structures over some graves, resembling miniature stone cromlechs, with a big flat stone on the top. The flat stones are more elaborate than the grave-stones frequently to be met with in other parts of the country, and at least one of them is particularly well preserved, which is very interesting from an archæologist's point of view. The best preserved of these cairns consists of a number of stones set upright in an ellipse with a well-cut smooth table-stone five feet by four. Here are said to be buried the great chieftains and leaders of a people who have long since passed away, before the modern village near the place had its name, or in fact had begun its existence. Strange weird superstitions are peculiar to the Chins and the Chinbôks, even to this day. From the grave of a recently deceased relative, no matter if the distances be great, up to their dwellings, the survivors run fine cotton threads which are to guide, as they imagine, the spirit of the departed should it desire to re-visit its late home. The threads run from bush to bush, often in the thick jungle where there is very little path. Where two paths diverge, and the road might easily be mistaken by a traveller, these queer people put up in a horizontal position, little square shaped tunnels of bamboos or sticks, about one foot or eighteen inches high, which they call "*nat*-paths," pointing along the correct jungle path, and are meant to prevent the spirit of the departed from losing its way on re-visiting this terrestrial sphere. Nevertheless, rough and uncivilized as these denizens of the jungle today undoubtedly are, they show a very commendable sense of veneration, or reverence for the memory of their dead relations and friends. They even preserve the ashes of the deceased for two years, storing those relics away in a miniature house. After the expiration of

two rainy seasons the ashes are carefully deposited in a grave in the cemetery, where the usual Chinbôn carved post, or small house, instead of the flat stone which is the great distinguishing mark of the Chinbôk, is set up as a monument in loving memory."

It seems very doubtful whether the Chins and Chinbôks ever were in possession of this part of the country. In a few wild Wa villages to the present day such cromlechs are to be seen, and the upright stones are comparatively common.

The actual laying of the foundation of a pagoda is not often seen by Europeans. A very good description of the procedure in the case of private persons is given in Dr. Anderson's *Mandalay to Momien*, page 52:—

"A small square of ground, the exact size of the base of the intended pagoda, was railed off by a fantastic bamboo fence, two feet high, decorated with flowers and paper flags. A wooden pin covered with silver tinsel, and bearing a yellow lighted taper, was fixed in the centre and another about two feet from the south-eastern corner of the level plot; round the first a quadrangular trench, and a deep hole by the side of the other, were dug and sprinkled with water. Eight bricks, each the exact size of one side of the trench, were prepared. On four the name of Gaudama was inscribed in black paint; on the others a leaf of gold was placed on the centre of one, silver on the second, a square of green paint on the third, and red on the fourth, each having a border of green. A round earthen vase containing gold, silver, and precious stones, besides rice and sweetmeats, was closed with wax in which a lighted taper was stuck and deposited in the south-east hole by the builder of the pagoda, who repeated a long prayer, while the earth was filled in and sprinkled with water. This was an offering to the great earth-serpent, in the direction of whose abode the south-east corner pointed. It is an interesting relic of the snake worship once so prevalent. * * * In the next part of the ceremony, the depositing of the bricks in the trench, the Shan was assisted by his grandmother, wife, and daughter. He knelt at the north, faced by his wife, his daughter on his right hand, and the grandmother on the left. The silvered brick, with lighted taper on it, was handed to the old woman, who raised it over her head and, devoutly murmuring a long prayer, placed it in the trench. The wife did the same with the red brick and its taper, and the daughter followed with the green, while her father took the gold one. The girl in raising her brick, burst out laughing, amused, as we were told, at having forgotten her prayers. The four bricks having been properly deposited the others were next laid in order, the sacred name downwards, and a layer of cloth spread over all. Earth was then thrown in and sprinkled with water, and the hole having been filled up, the ceremony was over."

This may be compared with a royal foundation such as that described under Mingun (*q. v.*).



Photo,-Block. Survey of India Offices, Calcutta, 1899.

YIMBAO KAREN WOMEN.

CHAPTER XII.

GEOLOGY AND ECONOMIC MINERALOGY.

OUR knowledge of the geology of Upper Burma remains very unequal. Detailed examination by Dr. Fritz Noëtling and other members of the Geological Survey of India has been made in several places, but concerning the greater part of the country we know no more than we did before the annexation. The chief general authorities remain Dr. Oldham and Messrs. Medlicott and Blandford.

The general parallelism of all the streams and hill ranges gives an appearance of simplicity to the physical geology of the country, but owing to the prevalence of forest it has been found extremely difficult to determine the stratigraphy, and very little can be said to be actually known about the formations occurring.

The following are the groups in which the rocks found in Burma have been arranged, with their approximate geological position :—

Name.	Rocks.	Supposed geological age.
1. Newer alluvium ...	Blown sand, littoral concrete, regur and recent alluvial deposits.	Recent.
2. Older alluvium ...	Sands and gravels of the older river alluvium, laterite, &c.	Post-tertiary.
3. Fossil wood group ...	Sands, gravels, &c., with silicified wood and bones of mammalia.	Pliocene.
4. Pegu group ...	Shales and sandstones, occasionally calcareous; fossils numerous.	Miocene.
5. Nummulitic ...	Shales and sandstones with some limestone bands containing nummulites.	Eocene.
6. Negrais rocks ...	Similar, but much hardened and sub-metamorphic in places.	Eocene and cretaceous.
7. Mai-i group ...	Limestone, sandstone, calcareous shales, &c., with ammonites in flakes.	Cretaceous.
8. Axial group ...	Shales, sandstones, &c., more or less altered, and occasionally schistose.	Triassic.
9. Moulmein group ...	Limestone, reddish sandstone and shales.	Carboniferous.
10. Mergui group ...	Slaty and schistose beds, grits, &c. ...	Carboniferous.
11. Metamorphic ...	Gneiss, mica, slate, &c., with granite veins.	Azoic.

Of these groups the first three form the greater portion of the Irrawaddy valley. The Pegu Yoma consists entirely of the Miocene group, consisting wholly of beds of later tertiary age, chiefly sandstone and shale, and the Arakan Yoma and the spurs to the east-

ward and the westward of the main range are chiefly of early tertiary age resting on cretaceous and triassic beds, which rise to the surface in the western face of the range. The carboniferous limestone and its associated beds, together with the Mergui group, appear to run up the line of the Salween, and the main area of metamorphic rock lies to the east of all the other formations. The Burmese gneiss series consists of more or less granitoid gneiss, hornblendic gneiss, crystalline limestone, quartz, and schists of various kinds. In many places the gneiss becomes a true granite. So far as is known, there are two groups, the gneissose formation and limestone, which has been supposed to be of lower carboniferous age, but according to recent investigations more probably belongs to the lower Silurian formation.

Metamorphic rocks occupy a large but unexplored area in Upper Burma. They form all the higher ranges in the neighbourhood of Mandalay and extend throughout a great portion of the country towards the Salween. Farther to the northward they extend from Bhamo to the neighbourhood of T'êng-yüeh (Momien) in Yünnan. The hills that skirt the Irrawaddy north of Mandalay are silurian limestone, locally charged with crystalline limestone, which is the matrix of rubies, and metamorphic rocks composed of gneiss and hornblendic schist, and opposite Kyaukmyaung greenstone and basalt are found. The Irrawaddy below Ava turns to the west and flows through newer rocks, while the crystallines continue to the southward, forming a great part of the Shan States and the Karen-ni country and extending southwards into Tenasserim. On the west of the river the formation of the Sagaing hills is partly metamorphic and partly tertiary. The latter are composed of sandstones and shales of the Miocene period.

The gneissic rocks of Burma have more resemblance to those of peninsular India than to the crystalline formations of the Himalayas.

The limestone which is so conspicuous near Moulmein extends northwards in large hills and ranges into Karen-ni and the Shan States. The abrupt rocks full of caves, characteristic of the formation, are very noticeable near Möng Nai, and northwards in the same latitude as far as West Mang Lön. The same formation is found eastwards of the Salween in Kokang and northwards in the Shan Chinese States of Kêngma and Chên-kang and probably far northwards. Probably it belongs to the carboniferous series and is identical, in part at least, with the limestone found in the Mergui Archipelago.

Until fossils are better known it is impossible to say whether the Burma series exactly corresponds to the carboniferous beds of the Himalayas and the Punjab. There can, however, be no question

that both are of the same approximate age. The occurrence of marine fossiliferous rocks of the carboniferous period at the two extremities of the extra peninsular area of British India, and the complete absence of any marine Palæozoic fossils within the peninsular region, afford the most striking illustration of the great divergence between the geological history of peninsular India and that of the surrounding countries.

In the Arakan range, running up into the Chin Hills, the rocks of the main range consist of rather hard sandstone and shales, greatly contorted and broken, traversed by numerous small veins of quartz, often slaty and sometimes schistose. The only characteristic beds are some white speckled grits, interbedded with shales and sandstones, thirty-five miles west of Thayetmyo ; a band of dark blue shale with conglomerate, part of which is calcareous ; and some thick-bedded shales passing into massive sandy shales, with hard nodules interspersed. To the northward there is a thick band of very pure limestone.

The main outcrop of nummulitic rocks extends from north to south-east of the Arakan and Chin Hills and west of the Irrawaddy. The beds have a general dip to the eastward. There are occasional outcrops of serpentine. The surface rocks are generally shales and sandstone. Coal has been found, but hitherto has not paid for its working.

The Irrawaddy valley from the old frontier to the neighbourhood of Ava, where the metamorphic area is entered, consists of the same tertiary rocks as are traversed by the river in Pegu. It is uncertain whether any true nummulitic rocks occur in the neighbourhood of the river or whether all the fossiliferous clays and shales should be referred to the Pegu Miocene group, but the latter is well represented. About fifty miles north-north-east of Yenangyaung and twenty-five to thirty miles east-south-east of Pagān, the extinct volcano of Popa rises to a height of three thousand feet above the rolling country, composed of Pliocene sands and gravels. The peak consists of ash breccia, but lava flows, mostly trachytic, form the lower slopes and the surface round the base of the volcano. Amongst these flows are some of a beautiful porphyry with crystals of pyroxene. The volcano is supposed by Mr. Blandford to have been in action during the Pliocene period.

Here and there on the edge of the alluvial tracts laterite of the detrital low-level type is found, forming as usual a cap to other rocks and having a very low dip towards the river from the sides of the valleys. The laterite seems to form the basement bed of the post-tertiary gravels and sands : and laterite gravels are largely dispersed through the older alluvial deposits. To the east of the Sittang river

there is a well-marked belt of this formation along the base of the metamorphic hills. The laterite rock here forms a plateau, rising forty or fifty feet above the alluvium of the Sittang valley.

Along the margin of the Irrawaddy and Sittang alluvium, there is a broad but interrupted belt of undulating ground, clearly distinguished from the flat alluvial plains near the river, both by the greater inequality of its surface and by its more sandy character. This tract is known as *Indaing*, or the country of the *in* tree (*Dipterocarpus tuberculatus*). This Indaing tract is composed chiefly of gravel, derived in a great measure from the neighbouring hills, but partly from a distance, a portion being washed from the top of the hills, and the rest deposited by the river. Besides this, large tracts of the same alluvial deposits are found in places isolated in the delta, occasionally being raised to a considerable height above the flat country around. One such tract, twenty miles long from north-east to south-west by ten broad, occurs east of Ngaputan, south of Bassein. Another of about the same dimensions lies to the south-west of Rangoon. These may be ancient *bhangar* deposits, or may be caused by local upheaval.

There is no important expanse of alluvial deposits in the valleys of the Burmese rivers. The beds of all immediately above the deltas are formed in places by older rocks, and there is no such continuous alluvial plain as is found along the course of the Ganges and Indus. The delta of the Irrawaddy has been formed by elevation by subterranean forces, and not by the accumulation of fluviatile beds of recent origin. Some tracts of alluvium occur here and there; but the wide undulating plains in the neighbourhood of the rivers in Upper Burma are composed, not of river alluvium, but of the Pliocene fossil wood deposits, and the hills which bound the river on both sides are chiefly composed of sandstones and shales containing fossil wood and bones.

The mud volcanoes at Minbu appear never to be subject to the violent eruptions of those at Ramree, where stones have been ejected and flames are sometimes emitted.

The soil of the upper portion of the Sittang valley is clayey, mixed with a good deal of sand, which disappears lower down. The chief formation of the small hills is laterite, and but few rocks are met with in the low land to the west of the river. To the east large masses of limestone rock rise suddenly out of the soil to a height of four hundred or five hundred feet.

The following topographical sketch of the country between the Irrawaddy and the Salween is adapted from a report of Dr. Fritz Noëtling.

The hilly country east of Mandalay, springing suddenly from the alluvial plains of the Irrawaddy, is generally known as the Shan plateau, though when the highlands are reached the frequent deep valleys seem to produce something very unlike what is generally understood by the name table-land. In a geological sense, however, the country still forms a plateau, although very much changed in its features. The term Shan plateau should, however, be restricted to the country south of the great Ngôkteik (Ho Küt)-Kunlông valley. As is often the case with plateaux, the highest elevations are found along the outer margin facing the Irrawaddy plains. The highest peak in this northern section rises to nearly 5,000 feet (4,714). The average height of the marginal ridge runs from 3,000 to 3,500 feet. The plateau slopes very slowly to the east for a distance of about 20 miles as the crow flies, till it reaches its lowest in the Hsum Hsai valley, with 2,339 feet, near the village of Kông-hsa. On the eastern side of this valley the country rises again to a height of about 3,000 feet, and has the appearance of forming a hill range running from north to south. This, however, is only the western slope of a second plateau slowly falling to the east and this particular feature of a steep slope facing west with a gradual dip to the east is several times repeated in the country lying east and south of the Ho Küt or Ngôkteik pass. As a result of this formation all the chief valleys run nearly north and south.

The country north of the Ho Küt-Kunlông valley cannot be described as a plateau, owing to the various systems of hill ranges. It is very difficult to say whether these predominate in one direction. It seems, however, that the direction from west to east of the main ranges was the original one. The direction of the valleys does not show the regularity of the southern part, and they have in fact no definite trend. The tracts north and south of the Ho Küt-Kunlông valley are thus perfectly different as regards their topographical features, and this Dr. Noëtling shows is in a great measure due to their different geological constitution.

The boundary which separates the plateaulike south from the hilly north is a long valley which begins a few miles east of the Ho Küt gorge and runs in a north-easterly direction to the Salween, and beyond it up the valley of the Nam Ting. The special feature of this valley is that it has not one general direction of drainage but three. The water runs eastwards from the village of Hwe Ka, from 30 to 35 miles east of Lashio, until it reaches the Salween. West of Hwe Ka the water runs to the west as far as Maw Hkeo (Bawgyo), where it is met by a stream coming from the west, to join the waters coming from the east. This irregularity in the direction of drainage proves that the origin of the valley must be a peculiar one, and so it is. The Ho Küt-Kunlông valley

marks a line of great disturbance of the strata. "Two large faults, "or probably two systems of compound faults, running from the "south-west to the north-east, are distinctly discernible. Along "these faults the country was thrown down, but as this action did "not of course take place very regularly, one part moving perhaps "stronger than another, the peculiarity of the drainage system is "readily explained. It is very common in this valley to meet iso-"lated hills rising abruptly in its centre. They are nothing more "than small parts of the sinking blocks which have become jam-"med. Sometimes they still touch both sides of the valley, form-"ing a kind of bar or bridge. Such bars breaking seemingly the "continuity of the valley are numerous, and of smaller or larger ex-"tension, and they account also in some degree for the direction of "the drainage. A most perfect instance of such a bar may be "seen between the villages of Man Peng and Möng Yaw. Here "the bar has a length of about five miles and the breadth may be "about the same. The bar consists of red sandstone, resting on "blue limestone, while the hills on both sides are formed of blue "limestone. Thus the lateral boundary between red sandstone "and blue limestone is as distinct as possible, proving plainly the "existence of a fault on either side of the bar. Similar bars may "be seen east and west of Lashio, but I have never noticed them so "clearly discernible as in the instance quoted above."

The direction of the faults is distinctly marked by a series of precipices running parallel, on either side of the Ho Küt-Kunlông valley, in a direction from south-west to north-east. On the map these precipices are shown as short hill ranges. This is, however, delusive, for these ranges have only one slope and are simple precipices facing the valley. It is from these precipices that Dr. Noëtling developed his theory of compound faults, because several of these precipices follow each other in one direction towards the centre of the valley. The rise towards the plateau therefore is a series of steps, and it is evidently a system of step faults that produced this feature of the country, the precipices representing the fault scarp on both sides of the valley.

The phenomenon is not continuous, but is very clear on the northern side between Maw Keo and Hsi Paw. Other such valleys in the Shan States are those of the Nam Ma and part of the Nam Tu (Myitngè).

There are therefore two systems of valleys, the first running from north to south, the second running from south-west to north-east. The direction of drainage is always to the south in the former, but does not always keep to one direction in the second system. It is difficult to say which of the two systems is the older; but since the

second system contains strata which, so far as is known, are not found in the valley of the first, and since whenever a valley of the first system crosses one of the second the first is thrown off its direction, Dr. Noëtling considers the east and west system to be the older, though close investigation may disprove this.

The strata forming this country belong to the following formations :—

(1) The Gneissic.
(2) The Sub-metamorphic.
(3) The Palæozoic, ranging from probably the Cambrian to the Upper Silurian system.
(4) Red Sandstones of undetermined age.
(5) Tertiary formation, probably later Miocene.
(6) Alluvial formation, including river deposits and hill clay.
(7) Volcanic rocks; porphyry of unknown, and granite of gneissic, age.

The limestones of the Palæozoic formation are the most common, and then come the shales of the sub-metamorphic formation. Of inferior importance is the gneiss, while the red sandstones and the strata of tertiary formation, such as sandstones, clays, and coal seams, are only locally developed. Alluvial deposits are found wherever there is room left, but hill clays are most prominent. Of the volcanic rocks granite is only found in the north; porphyry so far only appears in the shape of pebbles in the Nam Ma.

The gneissic formation is particularly developed in the northernmost part of this territory in Möng Lông State and along the frontier of the Ruby Mines district. Its mineralogical composition is distinctly that of the Himalayan gneiss, white or greyish in colour. The common felspars are orthoclase and albite. The same gneiss is again met with on the outskirts of the Shan plateau near Kyauksè, where it forms thick beds. Here it is associated with mica schists. Gneiss is also found along the right bank of the Irrawaddy in a small band extending from Sagaing to the north. In the Möng Lông State, as well as near Kyauksè, the gneiss seems to be associated with eruptive granite. It is, however, not quite certain whether the granite is true eruptive granite, although from the way in which it occurs this seems very probable.

The sub-metamorphic formation appears only to be developed in the northern part of this section. It seems, however, that its southern boundary is not far from the northern fault bounding the Ho Küt-Kunlông valley. The peculiar topographical features of the country north of this line seem therefore to be chiefly due to the nature of the strata, gneiss and shales, which are developed here. The strata belonging to the sub-metamorphic formation consist of

blue or greenish shales containing frequently veins of white quartzite of somewhat honey-combed appearance. The bulk of the quartzite pebbles met with in the gravels of the plains Dr. Noëtling thinks originate in the destruction of these quartzite veins.

The Palæozoic formation is of very large extension in the country east of Mandalay. Most probably the isolated hills rising from the plains belong to it, although they are very much metamorphosed. It certainly begins at the foot of the hills and extends from there to the east as far as the Salween, and since the Trans-Salween hills have the same appearance as those to the west of it, we may fairly conclude that it extends further still beyond the Salween. Its northern limit is roughly marked by the northern slope of the Ho Küt-Kunlông valley, although both sides are formed by it. How far it extends to the south is not known at present. If, however, the limestone hills east of Moulmein are of the same age as those near Mandalay the Palæozoic formation has a considerable extension in Indo-China.

The strata consist of limestones only, and dark blue colours are prevalent ; greyish, green, and red limestones are scarcer. According to their position Dr. Noëtling distinguished two groups—

(*a*) The lower group : Mandalay limestone without fossils.
(*b*) The upper group : Pyintha limestone with fossils of Lower Silurian age.

"(*a*) *The lower group, or Mandalay limestone.*—The Mandalay limestone forms the foot of the Shan hills, and very likely some of the isolated hills rising from the plains belong to it. It is of a dark blue colour, bedded in thickish layers and seemingly without fossils. Along the outskirts and in the plains Mandalay limestone is very much metamorphosed. In the plains it is changed into a white crystalline limestone which is pierced by numerous veins of quartzite and an eruptive rock, the nature of which can only be determined by microscopical examination. Along the western slope of the Shan plateau the Mandalay limestone has also suffered another metamorphism by pressure. This pressure has crushed the rock to small fragments, which then were again cemented by the deposit of white crystalline limestone. The limestone is thus traversed by numerous fine white veins which produce a very good effect on the black background, and I should therefore think it would do very well for ornamental purposes. A distinct zone of about 2 miles in breadth of such metamorphosed limestone can be noticed along the western slope of the Shan plateau."

"(*b*) *The upper group or Pyintha limestone.*—The Pyintha limestone can be easily seen between the twenty-second and twenty-sixth miles on the road from Mandalay to Maymyo. It consists of

grey, greenish grey, reddish grey, and red limestones, frequently rather clayey. It is bedded in thinner layers than the Mandalay limestone and breaks into fine big flags. I was fortunate enough to discover a small fauna in this limestone, about which I have already published a short notice in the Records of the Geological Survey of India for 1890.

The following fossils were collected :—

Crinoidarum gen.; isolated links and fragments of the stem; belong evidently to two different species.

Echinosphaerites Kingi spec. nov.; a gigantic species of this well-known genus of the Lower Silurian group.

Orthoceras sp. cf. regulare, in numerous fragments.

Although the specimens were very much disfigured by pressure, they were quite sufficient to determine the age of this limestone, and proved it to belong to the Silurian formation, more particularly to the Lower Silurian. As the *Echinosphaerites* limestone of Northern Europe ranges close to the basis of the Lower Silurian group we may fairly surmise the same age for the Pyintha limestone. Now, as the Pyintha limestone certainly rests on the Mandalay limestone, the latter must necessarily be of an earlier age, and being of a considerable thickness it may be supposed that it represents the equivalent of the Cambrian formation. Unfortunately I was not able to examine the strata which followed the Pyintha limestone, the ground being not very favourable for a considerable distance, when there were again some cuttings along the road. A blue limestone of similar nature as the Mandalay limestone was noticed, and the same limestone was found as far as the Salween. Though I searched carefully, I did not discover a single fossil. Now it is difficult to say whether this blue limestone is of the same age as the Mandalay limestone, or whether it represents a later group. Only detailed examination extending over a large area and for a long time will settle this question."

So far as is yet known, red sandstone is found only in that part of Ho Küt-Kunlông valley east of Hsi Paw, and in the neighbourhood of Lashio. It rests on the blue limestone, but whether conformably or not Dr. Noëtling did not ascertain. No fossils have been discovered in this series of strata, and it can therefore only be said that they are of past Silurian age.

If the sandstones should prove to be of Palæozoic age, the whole of the Mesozoic group up to the most recent tertiary beds would be unrepresented in this part of the Shan Hills, and therefore either the once existing Mesozoic strata have all been washed away, or "the present Northern Shan Hills form part of an old continent "which was laid dry at a very early epoch. The present Shan

"plateau forms now only the socle, so to say, of a once mountain-"ous country, the mountains, however, having all disappeared, "shaved off by the action of the break-water advancing inland, and "it is most likely that the Shan plateau formed up to tertiary times "a continent. Further examination, particularly to the south, will "prove whether there is any substantiality in this theory."

The tertiary strata are, so far as is at present known, only found in the valleys belonging to the second system, that is to say, the valleys which run from south-west to north-east. As these valleys, however, originated by the downthrow of a part of the strata along a system of parallel faults, it is clear that the tertiary strata must once have been in a higher level than they are now, provided that it cannot be proved that they have been formed locally on their present site. If the first theory is found to be correct, the tertiary strata must formerly have had a larger extension. They were, however, nearly totally destroyed, and only those parts remain which were protected from the sides by being thrown down from their original level. If they were deposited locally, it cannot be expected that they will have a large extension. "This proves that, although "this question seems to be of only scientific value, it has a most "important practical side if we come to estimate "the extension of the coal-fields. Now the proof "of either theory must be found in the stratification of the tertiary "beds. As regards the Lashio coal-fields the facts are not strong "enough to disprove absolutely the theory that they are only local "deposits, but as regards the Nam Ma-Man Sè coal-fields, the ob-"servations are strongly in favour of the down-thrown block "theory, that is to say, that the present coal-fields form only part "of beds, once more extended, which have been preserved by "sliding down in a kind of trough in which they now form the core. "It is, therefore, also possible that the Lashio coal-field is of the "same origin. This theory being admitted, it will give valuable "hints where to look for further coal-fields; it is in the valleys of "the second system that they may be expected, neither on the "heights of the plateau nor in the valleys of the first system. "Subsequent examinations will be necessary to produce further "proof, but whatever is known at present about the different coal-"fields in the Northern Shan States seems to support this theory."

Coal.

The tertiary beds are apparently late tertiary. The strata in the Lashio valley are different from those of the Chindwin, but those of the Nam Ma valley have considerable resemblances. The fossils which have been found—numerous fragments of a small Planorbis-like snail and another big gastropod—are so insignificant and are besides so much disfigured by pressure that it will be impossible to identify them. The question of the age of the Shan coal-fields

must remain open, until further more significant fossils can be found. For the present it can only be said that they are probably of late tertiary age.

The strata consist of sandstones, clay, and coal seams. The sandstones are finely grained, of white or yellowish colour, and rather soft. They should, however, form a good roof; the clays are grey or brown, easily softened by water.

The coal occurs in beds of various thickness, from two inches up to thirty feet. Thin seams are not frequent. The average thickness of the seams in the Nam Ma coal-field is five to six feet, and a little more than this in the Lashio coal-field. In the Lashio field there may be one or two seams and in the Nam Ma coal-field the probable number may be ten or twelve or perhaps more. The aggregate thickness of coal in the Lashio field is certainly more than thirty feet; in the Nam Ma field about fifty feet. Nothing is known at present about other fields.

Eleven assays of the coal were made by the Chemical Examiner in Rangoon, and one in the Laboratory of the Geological Survey of Calcutta. The following table gives the results of this analysis :—

No. of sample.	Description.	Moisture (only assayed in the Calcutta analysis).	Volatile and moisture.	Fixed carbon.	Ash.	Remarks.
1	Coal from Lashio, dull colour, very brittle.	...	66·75	24·05	9·20	Burns readily; ash reddish.
2	Coal from Lashio, probably different seam from No. 1 seam.	...	54·48	35·44	10·08	Burns readily; ash reddish.
3	Coal from Na Leng (Lashio coal-fields).	21·30	33·18	33·06	12·46	Does not cake, not with vapour even; ash dark red; contains much iron pyrites.
4	Coal from Nam Ma seam (No. 1), of bright colour, but rather friable.	...	56·82	38·58	4·60	
5	Coal from Nam Ma seam (No. 2), of bright colour, but rather brittle.	...	52·59	37·64	9·77	Average, with intervening earth matter.
6	Coal from Nam Ma seam (No. 3), of bright jetty colour, hard but laminated, best sample.	...	60·45	36·15	3·40	Fracture glistening.
7	Coal from Nam Ma seam (No. 4), of bright colour, but rather brittle.	...	58·37	33·47	8·16	

No. of sample.	Description.	Moisture (only assayed in the Calcutta analysis).	Volatile and moisture.	Fixed carbon.	Ash.	Remarks.
8	Coal from Nam Ma seam (No. 5), of bright colour, laminated and brittle.	...	56·08	34·08	9·84	
9	Coal from Hwe Tan Pai Pa on the Nam Ma stream, of bright colour, a little friable.	...	53·49	35·12	11·39	
10	Coal from Nam Salè, a tributary of the Nam Pông, dull looking coal.	...	53·71	31·69	14·60	
11	Coal from Man Sè seam (No. 1), of bright colour, very brittle, 6-inch seam.	...	53·60	34·22	12·18	
12	Coal from Man Sè seam (No. 2), dull looking, brittle, 3-inch seam.	...	55·42	34·94	9·64	

From this table it will be seen that nearly all the samples of coal, except sample No. 1, have a remarkable conformity of composition. The highest percentage of fixed carbon was 38·58, in sample No. 4, the lowest 31·69, in sample No. 10, a difference of not more than 6·89, and the percentage of ash varies little more. Unfortunately nothing can be said about the percentage of volatile matter, because the Rangoon essays include moisture. As all the samples came from seams exposed in river-beds, it would not be quite correct to draw conclusions from these figures. They also show, however, a great conformity and, if we assume a percentage of moisture of 20 to 21 per cent. as proved by the Calcutta analysis, we find also a great conformity amongst the samples as regards the volatile matter, and further see that the percentage of fixed carbon and volatile matter is nearly the same.

Sample No. 1 had been longer exposed to water than the others, which accounts for its exceptional character. The average of the eleven analyses from Nos. 2 to 12 of the Shan coal shows the following composition:—

Volatile matter (including moisture)	... ...	55·40	{ Moisture ... 21 Volatile ...34·40
Fixed carbon	... ...	34·94	
Ash	... ...	9·67	
Total	...	100·01	

The coal is therefore comparatively speaking of poor quality, and can hardly be called coal. The term lignite or brown coal would better express its composition.

As regards its physical qualities, the Shan coal has rather a low specific gravity, provided that it is not mixed with iron pyrites. If it is not disintegrated by the water, it is hard and has a bright, dark brown, nearly black colour (in several samples the colour is black), the fracture is glistening, and it breaks in big lumps. If, however, exposed for some time to water and air, the colour gets dull, earthy looking, and, owing to its lamellar structure and to the cleavage, the coal readily disintegrates into small, prismatical fragments.

It may therefore be said that the Shan coal when fresh would make a very good fuel, and that being rather hard it would stand a long transport. Those seams which owing to their friability could not be well transported should make an excellent material for compressed fuel.

The following table of analyses gives the composition of Indian coal from Raniganj, Kurhurballi, Assam, Upper Chindwin, Namkongchaung above Mogaung, Hsihkip near Yawnghwe (Southern Shan States), and the average composition of Shan coal :—

Description.	Volatile, including moisture.	Fixed carbon.	Ash.	Remarks.
India, Raniganj coal ...	32·65	51·08	16·27	Not stated whether volatile matter includes moisture or not.
India, Kurhurballi, average of sixteen analyses.	24·01	63·66	12·33	
India, Assam ...	36·20	60·00	3·8	
Burma, Upper Chindwin, average of eleven analyses.	44·73	49·95	5·30	Moisture ... 10·14; Volatile, excluding moisture ... 34·59
Burma, Namkong near Mogaung.	52·67	35·98	11·35	Moisture, not separated from other volatile matter.
Burma, Mantha, opposite Thabeitkyin, Upper Irrawaddy.	42·76	34·08	23·16	Moisture ... 9·20; Volatile matter, excluding moisture ... 33·56
Burma, Shan States, Palaung coal-field, east of Hlaingdet, average of eight analyses.	21·15	65·81	13·01	Moisture ... 4·29; Volatile matter, excluding moisture ... 16·86
Burma, Shan States, Legaung coal-field, east of Hlaingdet, average of two analyses.	14·58	70·43	14·99	Moisture ... 2·08; Volatile, excluding moisture ... 12·50
Burma, Shan States, Hsi Hkip, near Yawng Hwe.	59·00	30·26	10·78	Moisture ... 22·74; Volatile, excluding moisture ... 36 26
Burma, Shan States, Lashio and Nam Ma coal-fields, average of eleven analyses.	55·4	39·94	9·67	Moisture about ... 7·21; Volatile matter about... 34·40

"From this table it will be seen that the coal of the fields in the Northern Shan States is a very much poorer coal than that of the fields in the Southern Shan States. In the latter the percentages of fixed carbon are 65·81 and 70·43 respectively, while in the former the average is not more than 34·94, and the percentage of volatile matter and moisture is also much smaller. The coal of the Southern Shan States would therefore be preferable to that of the Northern Shan States, provided there was a sufficient quantity of it. The late Mr. Jones says, however, in his report on the Palaung coal-field (Records of Geological Survey of India, Volume XX, Part IV, 1887, page 185): 'I did not see a single seam which held out any 'real prospect of being workable. The seams are exceedingly ir-'regular, that is to say, they are not to be depended upon to extend 'to any distance. A large proportion of the coal consists of mere 'pockets.' This is by no means encouraging. The coal seams in the Northern Shan States are more favourably deposited and, since they exist in workable quantities, could be depended upon for the supply of fuel to the Shan States Railway, although they are of inferior quality. The Indian coal, as regards the three localities above mentioned, is certainly superior to the Shan coal, but the average Chindwin coal does not differ so much, volatile matter and ash being nearly the same and fixed carbon 15·01 more than in the Shan coal.

"If we take only the percentage of fixed carbon for comparison, the equality of the Mogaung, Mantha, and Lashio-Nam Ma coal is most startling, the figures being 35·98, 34·08, and 34·94 respectively. The Mantha and Lashio-Nam Ma coal differ, however, considerably as regards the percentage of ash and moisture, while the percentage of volatile matter again agrees. If the whole composition is taken into consideration, the similarity of Mogaung coal and the coal from the Northern Shan States is really surprising, as will be seen from the following table :—

	Mogaung coal.	Coal from the Northern Shan States.
Volatile matter, including moisture ...	52·67	55·40
Fixed carbon	35·98	34·94
Ash	11·35	9·67

"Can this similarity of composition be an indication that coal-fields of nearly the same age as those of the Northern Shan States are developed west of the Irrawaddy in the Mogaung district and, if so, do these strata extend across the Irrawaddy and are there coal seams of any larger extension in the country to the north of the coal-field here described? These are questions of no small importance, which, however, can easily be settled by actual examination in

the field. The last analysis is that of lignite at Thigyit. It will be seen that, although it is poorer in the percentage of fixed carbon, it certainly belongs to the same group as the Lashio and Mogaung coal."

Alluvial deposits.

Alluvial deposits are found everywhere where there is a favourable place for their deposit. The river deposits, such as conglomerates, gravels, and sands, are of course limited to the valleys, while the clays may be found in the valleys as well as on the top and slopes of the hills. According to their origin we may distinguish two kinds of alluvial deposits :—

(*a*) deposits resulting from the superficial desintegration of the rocks; hill clay.

(*b*) deposits resulting from the refuse of rivers, conglomerates, sand, river clay, and silt.

Hill clay.

The hill clay is found everywhere in the Shan plateau. It is evidently the result of disintegration of the limestone *in situ* and as such covers the limestone with a coat of varying thickness. It is a red, tough clay and, when washed down to the valleys, contributes largely to the deposit of river clay.

River deposits are found everywhere in the valleys where there is a favourable place for their deposit. They are worthy of mention not only as the matrix for precious stones, such as the ruby or the tourmaline, but also because they conceal the coal-bearing strata in the valleys. It is because of the thick layers of conglomerates and clays that the coal-fields have only been superficially examined. The cap of river deposits completely hides every feature of the strata underneath, and it is only at places where the present streams have cut deep enough, that the strata underneath can be examined. For this reason they will also be of importance when it comes to the working of the coal-fields. We can distinguish (1) conglomerates, gravels, sand; (2) clay not bedded ; (3) well bedded silt and clay of the Irrawaddy plains. Of these different strata only Nos. (1) and (2) are of importance here.

(1) *The conglomerates.*—Consist chiefly of pebbles of white quartzite, always rounded, in various sizes up to that of a man's head. The Möng Lông conglomerates contain rubies and tourmaline, the conglomerates in the Nam Ma valley, quartzite porphyry. The pebbles are clamped together by a clay cement containing numerous angular grains of quartzite. They thus form a compact mass which is difficult to work with tools, but when softend by water can readily be removed. The conglomerates locally change into gravels and sands.

(2) *River clay.*—The river clay is usually of brown or reddish colour; it is not bedded, and, wherever conglomerate and clay occur together, it covers the first. In the Lashio valley it lies directly upon the coal-bearing strata, where it may, however, be mixed with the hill clay washed down. Thus occasionally the most recent deposits of river clay are mixed with sand and gravel as in the Namsèka ruby mines.

Volcanic rocks.

Granite and the peculiar rock piercing the crystalline limestone of the Mandalay hill have been mentioned above. A few words only are necessary regarding the curious specimens of quartzite-porphyry, discovered amongst the pebbles of the Nam Ma near Nam Ma village. Although only a close microscopical examination can confirm the porphyric nature of these pebbles, yet their general microscopical appearance is that of the true quartzite-porphyry, so common in Germany. The specimens collected by Dr. Noëtling show different varieties of various composition. The origin of these porphyries can easily be fixed, as the Nam Ma stream comes from the hills to the east of that village, and the porphyry must consequently be found between latitude 22° 33′ and 22° 35′ and in longitude about 98°.

Hot and saline springs.

In the Shan States, as in all other places, the great lines of disturbances or faults are accompanied by springs either hot or brackish.

They are found in all parts of the Shan highlands, both east and west of the Salween. The chief of those in the Ho Küt-Kunlông valley are at the following places :—

(*a*) Hot springs—

(1) Ta Pông, near Lashio.

(2) Möng Li Nam Pong, on the way from Lashio to Hsi Paw.

(3) Nam Hsim, near Hsi Paw.

(4) Man Kang, west of Möng Yaw.

(*b*) Salt springs—

(5) Maw Hkeo (Bawgyo), near Hsi Paw.

The springs appear always to rise on the margin of the valley just where the faults might be expected. The Ta Pông spring assumes the form of a horse-shoe-shaped tank, thickly filled with grey mud; the water is perfectly clear and of a beautiful blue colour. The temperature reaches the boiling point. No distinct openings are visible from which the water issues, but bubbles of steam rise continually from the bottom. The percentage of solid matter is very small. Two samples sent to Rangoon were found to contain 0·0588

per cent. and 0·41 per cent. respectively. The salts consist of sulphate of lime and magnesia with traces of alkalies, principally potash. It seems that the principal part of the solids is lime. This is natural, since the spring issues from limestone rocks. Dr. Sinclair, the Inspector-General of Jails, Burma, writes as follows of the water:—"Taken in quantity it would act as an aperient and "would beneficially affect a congested liver. Internally and exter-"nally it would probably be highly beneficial in cases of chronic "rheumatism and gout. The salts in solution have come from "dolomite in all likelihood. Much of the sub-soil water of Upper "Burma is similarly charged, though not to the same extent."

The Maw Hkeo salt-well is described separately under the head of salt.

THE RUBY MINES.

The chief ruby mines of Burma are situated in an elevated tract on the left bank of the Irrawaddy, about 60 miles east of the river and 90 miles north-north-west of Mandalay. Although rubies have been found at one or two other sites, mining operations have always practically been confined to the three townships of Mogôk, Kyatpyin, and Kathè. These lie in a belt of country of irregular width at an elevation of between 4,000 and 5,500 feet above mean sea level. Mines formerly existed in the Inkyauk valley near Bernardmyo, at Wapyudaung, 11 miles from Thabeitkyin, and at Laungni, 80 miles to the south-south-west of Kyatpyin, but they seem to have been long given up. The ruby tract proper, consisting of mines at work and those abandoned, covers an area of about 66 square miles, whilst the area in which mines are in active operation extends to 45 square miles.

The general trend of the mountain ranges of the tract is irregularly in an east and west direction. Mogôk valley bottom, where the principal alluvial workings are situated, is at a level of 4,100 feet above the sea, and lies north-east and south-west. It is bounded on the north and east by high ranges, rising in the Kyindaung peak to a height of 7,362 feet. The Yeni stream passes through the valley and at its western extremity takes a sharp turn to the south and so leaves it. The western end of the valley is blocked by low hills and ridges, which increase in height westwards to the point where they form the eastern boundary of the Kathè Valley. The mountains which form the northern boundary of the Mogôk Valley sweep to the north-west and gain considerably in height, one peak, Taung-ni, being 3,775 feet above the village and 7,775 above sea-level. From this the country slopes away gradually to a wide tract of low hills and minor valleys. The hillsides have mostly been

cleared of heavy jungle and are covered with scrub and high grass, with low trees dotted here and there. The valley itself is flat-bottomed, about two miles in length, and laid out in rice cultivation, and is bounded by hillocky land where the old alluvial workings were carried on, latterly at the head of the valley. The Yeni is a fair-sized stream some fifteen yards in width. From Taungni the northern watershed turns south-east and passing through the Sagyima range falls away in height as it curves round to form the western termination of the Kyatpyin Valley. The southern side of this and of the Kathè Valley consists of low rounded ridges. The Kathè Valley, which may be considered an offshoot of that of Kyatpyin, is of no great extent, and is traversed by two small streams which unite near the village and join the Nagu, which flows through Kyatpyin. The valley of Kypatpyin is narrow, but is about 2¼ miles long, and is for the greater part under rice cultivation. It is about 4,700 feet above sea-level. Beyond Kyatpyin the hills fall abruptly 1,500 feet. Throughout the hills there are numerous small streams.

Mr. Barrington Brown gives the following account of the geology of the tract, and most of the details here given are taken from his report :—

"The rocks of the district are of palæozoic age, and are of exceeding interest, not only from their being composed of intimately associated gneiss masses with interbedded granular limestone, in layers of greater or lesser magnitude (which are the matrix of the rubies), but also from their forming the bed-rock of the alluvia, the source from which the chief supply of rubies has hitherto been drawn. In the gneiss are also subordinate beds of felspathic granite allied to pegmatite, hornblende-schist, and granulite.

The strata may be classified as follows :—

(1) Recent deposits	Hill wash. Alluvium.
(2) Palæozoic rocks (gneiss) containing	Granular limestone. Hornblende-schist. Pegmatite.

"*Hill-wash.*—Through the great disintegrating power of rain and atmosphere continued for ages, portions of the palæozoic rocks of the country have been decomposed, and the resulting materials washed down the mountain sides, where they now form a covering thereon of from a few feet to upwards of 50 in thickness. Portions of the gneiss and other similar rocks *in situ* on the mountain tops, over large areas, have become entirely decomposed, so as to be rendered soft and friable to a considerable depth, whilst the limestone has been disintegrated and dissolved. The resulting clayey material forming the hill-wash is of various colours, from dark red through light red to pinkish and white. The minerals these rocks contained have been liberated and scattered through the clay. Amongst the chief is the valuable oriental ruby and the spinel, which are found sparingly in the red loamy clay, where they are naturally scattered, but occur more intimately in the yellow and brown clays in the same deposit, where the

mountain streams have placed them in their beds amongst large water-worn blocks, detached from their original position and rolled down. In the latter case it is often irregularly deposited, generally amongst the inequalities of the surface of the granular limestone. It would appear that the brownish clay was made up of sorted red clay derived from the decomposition of gneiss, mixed with the clays produced by the disintegration of the granular limestone. Amongst the ruby clay are some pebbles of quartz and other rocks which are completely water-worn, while the majority are not so, and in some instances hardly one of the pebbles are rounded. The valueless spinels called "minthars" by the miners, are invariably in pyramidal crystals; also quartz in perfect crystals is common, along with a few worn pebbles of the same rock; so that we may infer the rounded pebbles have been the result of rolling in potholes and crannies of the rocks, and not from having travelled far. Rubies also are found in a water-worn condition along with these, but many, though broken, are not thus rounded. As we might expect from its mode of decomposition, the ruby clay in this deposit is most irregular in thickness and width.

"On washing it and getting rid of the clay, the resultant materials remaining are sand and gravel and minerals. Amongst the former we find quartz, gneiss, pegmatite, and granulite, and amongst the latter, besides rubies, there are spinels, tourmaline, corundum, garnet, rock crystal, &c. The same brown and reddish clays, washed into extensive fissures, cracks, and caves of the granular limestone by streams and rains, is another source for the production of rubies which was formerly most extensively worked.

"This deposit is a most valuable and extensive one, and not only are by far the greater portion of the present working mines in it, but also numerous old excavations which were formerly worked.

"*Alluvium.*—In the bottoms of the larger valleys there are extensive level deposits of alluvial matter, consisting of clay, gravel, and sand, which have been laid down by the large streams flowing through them. This varies in composition in different portions of the valleys, being composed in the upper part of Mogôk valley of brown, sandy loam, resting on coarse gravel, which in its turn covers a bluish-grey admixture of a clayey material, containing gravel and sand, together with rounded gneiss blocks. This latter is the ruby-bearing portion and is usually from two to six feet in thickness. It rests upon a bottom clay in places, and on white floury kaolin, with white mica, the result of the decomposition of the bed-rock, in others. The thickness of the whole deposit is here from ten to twelve feet. The *twinlôns* in front of Mogôk village are from twenty to twenty-nine feet in depth to the bottom of the ruby sand and gravel, which is there from five to seven feet in thickness, but very variable. The ruby-producing material is composed of yellowish sand containing coarse, rounded gneiss shingle, resting on a substratum of yellowish-brown clay, enclosing a few pebbles, but no rubies. In the *twinlôns* in alluvium near the village of Taungway and the river we find a yellow and red loamy top clay to a depth of twenty-four feet, when three to four feet of yellowish sand, with large water-worn rocks of gneiss and pegmatite, is reached, resting on an under-clay of decomposed gneiss of a micaceous character.

"The alluvium between Taungway and Mintada, away from the river, is red and yellow loam, with large blocks of pegmatite for a depth of fifteen

feet to the white decomposed bed rock, and the ruby gravel is shallow and irregular. At another part nearer Mintada the strata sunk through is a black clay and sand.

"In the Yebo Valley the few pits there show a brown loam passing into grey clay, having a thickness of twelve feet, when the dark grey ruby sand and gravel is reached. *Twinlôns* are not now being worked in the alluvium of the Kyatpyen, Kathay, or the minor valleys of that district at the present time, but there are the remains of numerous small round pits to be seen, the sides of which have fallen in, and nothing is to be learnt from them of the nature of the alluvium they passed through.

"At Bernardmyo, in the Injouk valley, some old workings in a branch creek of the Injouk river near the cantonments show the materials thrown out of the numerous pits, although the greater portion has been washed away. The depth of these was some twelve feet, and the clay extracted was of two kinds, a bluish grey, and a yellowish with much quartz gravel barely water-worn. There are some very perfect specimens of rock crystal lying about. From these mines sapphires of good quality were formerly obtained. I endeavoured to ascertain the nature of the alluvium beneath the bottom clay near Mogôk, and whether there was a second ruby-bearing gravel beneath, by boring, but was unable to induce the Shan miners to undertake the work, the screwing and unscrewing of the rods being by them considered a most laborious task.

"The miners cannot be induced to dig deeper than the bottom of the ruby sand, as the under-clay is soft and dangerous to sink through, its weight breaking their light timbering, and accidents have occurred to those making the attempt.

"*Gneiss.*—In describing the palæozoic strata the gneiss is taken first, owing to its being the chief rock forming the earth's crust of the neighbourhood, and in fact of all the surrounding country; the other rocks to be described being subordinate in development to it, and, though occurring extensively, merely form beds in it.

"It is of a grey variety, its foliation coinciding with its bedding. Its strike varies from north-east and south-west on the south side of the Mogôk valley, and in various directions between these borings as it is traced westward to the eastern end of Kyatpyen valley, whilst its dip is from vertical in the first-mentioned locality to southerly at angles of from 35° to 40° to the westward and northward. In but few places is true contortion seen, and then in a not very marked degree, except in the case of some minor beds which are of fibrous texture. On the spur running north from Chenedaung, a section in the precipice face has a great similarity to beds of grit when viewed from a distance; but, on examination, it is seen to be composed of layers of grey and light-coloured gneiss containing garnets, bedded with layers of white felspathic rock known as pegmatite, or a variety of that granite.

"It is chiefly a hard, fine-grained grey, compact gneiss of a massive character, usually showing its foliated structure by the weathering of the surface. The thinner beds are generally grey and light coloured, but are sometimes of very dark tints. On the range north of Kathay, near Sagiwa mountain, the gneiss is coarser in texture, and has a general greenish cast of colour.

"Crystals of red garnet are more or less disseminated through its mass and it is possible that it also contains rubies and spinel as well, but no clear evidence on this head has been obtained.

"*Granular limestone.*—The granular linestone is finely developed over the whole region examined, but more especially on the northern side of the ruby tract than on the southern. In the former locality its outcrop is seen crossing the mountain ridges and spurs in massive beds, forming dark grey to blackish jagged peaks. It is bedded conformably in the gneiss, the junction of the two classes of rocks being seen on both sides of the highly inclined bedding. The clearest of these is seen near the village of Pyagôn, where the gneiss of a finely foliated grey variety is lying on the limestone, its bedding coinciding most evenly with that of the latter rock. At the place of contact we have grey gneiss, then a limestone eighteen inches thick, then gneiss six inches thick, and then coarse granular limestone which, traced northwards across its outcrop, has a total thickness of some nine hundred feet. Near the junction the limestone assumes a somewhat schistose character, from the contained mica being arranged in parallel planes, and contains a variety of minerals, chiefly brownish and yellowish mica, graphite in flat crystals, white opaque felspar, purplish spinel, and amethyst corundum. Further away it becomes coarsely granular and of a calcspar variety, either white opaque, or bluish and greyish semi-transparent, in rhombohedrons which sometimes attain a size of over six inches in length. These beds alternate with fine crystalline limestone, and in places white statuary marble. Being joined in many directions, the bedding is generally indistinct, but in some places it is very clear, dipping at various angles from nearly vertical to 45°, coinciding with the bedding of the gneiss. As this is at a more or less high angle to the plane of the horizon, and has been compressed in a linear direction, the outcrop of the limestone forms a sinuous line from the head of Mogôk valley, along the mountains on its northern side, through Bobedaung and Kathay to Pingudoung, where it curves northward, and, passing through Welloo, trends away to the westward. Its outcrop is difficult to trace in the lowlying grounds where it is hidden by alluvium and on some of the hillsides where it is covered by hill-wash, but the principal layers show themselves on the ridges very clearly, and run as shown on the map. There they form a feature in the landscape, rising in dark masses, their true colour being disguised by a greyish black lichen which coats and clings to their surface. Thin beds of gneiss are in places interstratified with this rock. On the summit of Toungnee Pass the following clear section is seen. Traced from south to north it is as follows:—

(1) Limestone containing red mineral.
(2) Gneiss finely foliated and semi-decomposed, four feet.
(3) White limestone, two feet.
(4) Gneiss, thin bedded, six feet.
(5) Coarse white limestone, containing violet coloured mineral and green crystals, also graphite, sixteen feet.
(6) Gneiss finely foliated, fifteen feet.
(7) Coarse white limestone.

"Descending towards the Injouk valley there are beds of limestone for the first 250 feet, containing two layers of calcspar, which stand up above

the general surface of the ground in masses some 30 feet high and 15 feet in thickness.

"On the gneiss hills on the southern slope of Mogôk valley no outcrops of limestone are visible, but in the gorge of the river Yenee there are beds or gneiss in a vertical position crossing it, and striking west-south-west and east-north-east, containing two layers of interstratified limestone, one of some 30 feet in width and the other 20 feet. These latter are coarsely crystalline, although they do not contain calcspar layers. It is possible there are many more small beds in the gneiss, which owing to the absence of section and the thick covering of hill-wash are disguised.

"As might be expected, the chance of finding fossils in so altered a rock is rendered almost an impossibility. In the bed of a stream rising near Toungnee there is a bed of limestone containing small crystals of iron and copper pyrites, near which I found a block of the same rock of very curious appearance, which is either a singular form of crystalline arrangement or some mineralized organic structure. Its true character can only be ascertained when examined by a palæontologist.

"As it is in the calcspar beds in this limestone that rubies have been formed, and by their disintegration that these precious stones have been liberated and distributed in the alluvia, a great amount of interest and importance is attached to this information.

"*Pegmatite or white felspathic granite.*—In composition this rock varies considerably, containing crystals of white and sometimes of black mica in some layers, and in others none. Frequently crystals of schistose are numerous, when in some instances the colour varies from white to brownish. It is generally very coarsely crystalline, but when of a finer texture contains garnets. Its development is very extensive, and it forms thick beds in gneiss, where it is principally composed of felspar with a small proportion of quartz.

"*Hornblende-schist.*—This rock, of a very dark variety, containing a large proportion of hornblende, is seen sparingly in the gneiss, in a few localities confined to the vicinity of the granular limestone, in the Kathè and Kyatpyin districts. One layer four feet in thickness underlies a limestone bed at the back of Pingu Hill."

It is difficult to determine for how long a time the Ruby Mines have been known, but it has been stated that they were first heard of in Europe as far back as the fifteenth century. Burmese historians say that Mogôk (the Shan Möng Kūt) was taken in exchange for Möng Mit (Momeik) by the King of Burma in 999B.E. (A.D. 1637) and that mines were then in operation in the valley. Details are, however, very vague, and it was always the policy of the Burman Kings to envelop the mines in mystery and seclusion.

The rubies were obtained in the mines from a layer of sand and gravel in the alluvium of the valley bottoms, by the method of *Twin-lôn* working, or pits in alluvium, from open cuttings in the hill-wash on the slopes, called *Hmyawdwin*, and from caves and cavities in the beds of granular limestone by *Lu-dwin* mining.

These were the three forms latterly recognized under native rule. At one time there were quarry mines in a bed of calcspar, a coarse variety of limestone, but this was discontinued because the miners were not allowed to possess gun-powder.

The *twin-lôn* are square pits sunk in the alluvium, through a stratum of loam and clay, to the sand and gravel layer which contains the rubies. These pits vary in size from two feet to nine feet square, and are worked by four men to the smaller and ten to the larger pits. After a few feet have been dug, strong posts twelve feet long are driven down in each corner of the square; and in the case of a nine-foot pit, three more at equal distances apart along each side. Short slats are wedged across between each post to keep them apart, and at every two feet or so light flat timbers are wedged across the pit, each way, into notches in the posts to hold them firmly apart, and thus support the sides. The miners then proceed to dig out the clay with small, short-handed, spud-like spades, and fill it into small, bamboo baskets, which are hoisted by balance-poles to the surface. When some four or five feet have been sunk another similar set of cross-beams is put in, and half way between the two a double set of round poles in a similar manner, and these are lashed to those above and below by twisted rattan canes. Wattling and dry grass or leaves, filled in at the back of the spaces between the posts, support the clay walls, and prevent pieces from falling in. When they have excavated to the bottom of the first set of posts, they proceed to drive down a second set inside them, and when these have been driven through the ruby-bearing sand, they continue to sink and timber as before. On finishing a pit and sending all the sand to the bank, they take out all their timber materials for use in their next *twinlôn*. Round pits are few in number, and were usually mere trial pits to ascertain the presence of the ruby-sand. In ancient workings and especially in the Kyatpyin valley they appear to have been extensively used.

The balance, or well-poles, used for both hoisting the materials excavated and the water accumulating in the pit, are strong bamboos supported on bamboo posts, split at the top to receive the pole, which is pinned down with a wooden peg. A large basket filled with stones is used as a balance weight at the butt or short end, and to the longer end which overhangs the pit is attached a rope, or thin pole provided with a double wooden hook at the end for the purpose of attaching it to the basket. Some pits have five of these balance poles, each worked by one man, who lowers the basket to be filled, hoists it, empties the contents a few feet away by a jerk, without detaching the basket, and then lets the empty basket down again.

The miners believe that the best for rubies are the portions of the rock where a grey mineral with iron pyrites is found.

Besides the oriental ruby, the following are found associated at the mines:—

Red spinel, the spinel ruby.
Dark red translucent spinel.
Bluish opaque spinel.
Light pink opaque spinel.
Amethyst-coloured opaque spinel.
White transparent spinel.
Black opaque spinel.
Blue sapphire.
White sapphire.
Yellow sapphire, oriental topaz
Green sapphire, oriental emerald.
Zircon.
Red corundum.
Calcedonic corundum.
Rock crystal.
Moonstone.
Kyalite.
Black opaque tourmaline.
Graphite.
Lapis-lazuli.
Iron pyrites.
Red garnet.
Brown garnet.

Information as to the working of the mines under the Burmese Kings is not easily got. It appears that the tract was last leased by King Thibaw to certain headmen for one year ending in July 1886, at a payment nominally of two lakhs and fifty thousand rupees, all rubies worth two thousand rupees and upwards being reserved for the King. It appears also that King Mindôn obtained about ninety thousand rupees to one lakh of rupees yearly by direct management, and that the highest revenue realized by King Thibaw was one lakh and fifty thousand rupees. But the question is complicated by the fact that these sums seem to have included the right to collect bazaar and house dues and taxes on the gambling houses. All rubies excavated were brought to the lessee for exercise of his option of purchase. Those which he declined to purchase were sealed up in packets and sent to the Ruby Hall in Mandalay for disposal, after payment of royalty and various other imposts.

The mines were leased by the British Government to a company, but the hopes entertained have hardly been realized. The first lease was granted in 1889 to mine for rubies by European methods and to levy royalty from persons working by native methods. This lease; which expired in 1896, was renewed in that year for a further term of fourteen years, at a rent of three lakhs and fifteen thousand rupees a year *plus* a share of the profits. The work still continues to be carried on by persons licensed to work in the old native fashion, as well as by the company. The system which the latter, after many experiments, has now definitely adopted, is to remove

the surface soil over considerable areas, and then to raise the *byôn* or ruby-earth, which is found some twenty feet below the surface. The *byôn* is then washed by machinery similar to that employed in the African diamond mines. The value of rubies extracted by this method in 1896-97 was considerably higher than in 1895-96.

The Sagyin Ruby Mines.

These mines are situated in a narrow range of hills rising from the plain of the Irrawaddy river, at a distance of twenty-four miles north of Mandalay and eight from Madaya. The rocks composing the hills consist of beds of granular limestone, similar to that of the ruby mines of Mogôk and Kyatpyin, and are undoubtedly a southern extension of the same strata. There are three distinct hills, two to the south and one, considerably smaller, to the north of the village of Sagyin. In the hill first reached on the road from Madaya are the so-called alabaster quarries. On the eastern slope of the second hill are one set of mines where rubies were obtained from a semi-consolidated reddish earth filling the crevices in and between the limestone beds, also from the limestone rock itself, here of a highly crystalline texture, and of a bluish colour. Over a space on the hillside, two hundred yards in length and one hundred yards in width, are to be seen numerous old *lu-dwins* and small excavations. In the hardened red earth which fills the clefts in width of from two inches to eighteen inches are numerous round pellets of iron oxide, amongst which are rubies and spinels. The former are small and of a violet tint, which detracts greatly from their value. A second set of mines are seen in the third hill close to Sagyin village, at its southern end, where a quarry some thirty yards in length and six feet in depth has been formed by the removal by blasting of a bed of bluish coarsely-crystalline limestone. The rubies here also are small and off colour.

On the western side of the northern end of the third hill is a cave mine, and the remains of a large pit on the edge of the limestone in the alluvium. A notice-board on a post intimates in large gilded characters that the spot is "the Royal Mine." Here, according to the Thugyi of Sagyin, King Mindôn had over three hundred men at work digging out the semi-consolidated earth from the interstices of the rocks of the cave and sinking the pit in the alluvium. In one month he is said to have obtained thirty thousand rupees worth of rubies; and so rich, it is said, was the ruby-earth in the pit, that a few baskets of it yielded as much as twenty thousand rupees worth. After about a year's work the mine was abandoned, owing to the inability of the miners to cope with the influx of water.

Operations were long stopped on these mines by the orders of Government, but this stone tract was in 1896 reported on by Mr. Hayden of the Geological Survey Department. He was of opinion that the best part of the field had been worked out, but in 1897 rules were drawn out to regulate ruby-mining in this tract.

Nanyaseik.

A stone-tract was discovered at Nanyaseik in the Myitkyina district in 1893 and was worked under licenses granted by Government, in 1894 and 1895, but after that year the ruby-bearing areas appear to have approached exhaustion, for the receipts from licenses fell from thirty-two thousand eight hundred and eighty-eight rupees in 1895-96 to eighteen thousand and eight rupees in the year 1896-97. It is said, however, that the colour of the rubies obtained here is especially good, and Burmans maintain that, if quarry mines and blasting were permitted, the outturn would be very good indeed.

Nam Sèka in Möng Lōng.

Rubies have also been discovered at Nam Sèka in Möng Lōng sub-State of Hsi Paw. The village and stream of that name are situated about fifteen miles south-west of the town of Möng Lōng in latitude 22° 46′ and longitude 96° 44′. The village lies close to the junction of the Nam Sèka with the Nam Pai, a stream which is better known in the plains as the Madaya river. This stone tract was examined in 1890 by Dr. Fritz Noetling of the Palæontological Survey of India.

The following account is taken from his report on the features of the country:—

The greater part of the strata developed in the northern and western part of the Möng Lōng State belongs to the gneissic and submetamorphic formation, as the latter is called in the Manual of Geology of India; a much smaller part belongs to recent river deposits of the alluvial system. No other formations have been found in that part of the country, the azoic rocks forming the hills, while the alluvial deposits fill up the valleys in different grades of extension.

The gneissic formation.—The gneissic formation is developed to the north of the Nam Pai, as regards the country between Möng Lōng and Mogôk, but in its western continuation it forms the hills on both sides of the Nam Pai. The gneiss shows a Himalayan character, being of white or greyish colour, the common felspars being orthoclase and albite. The gneiss is well bedded and dips about 56° towards north. The gneiss seems to be associated with eruptive granite, as on the road between Möng Lōng and Nam Sèka large boulders of this rock can be observed for a short distance. Owing to the dense jungle its exact relation to the surrounding gneiss cannot be certain, but it seems to be true intrusive granite.

Sub-metamorphic shales.—The sub-metamorphic shales cover a larger area in the country than the gneissic formation. The hills to the south, east, and west of Möng Lōng are formed by strata belonging to this group. The strata are represented by red and greenish shales frequently intersected by veins of milky quartzite. Occasionally some of the shales contain such a quantity of quartzite fragments that they have the appearance of sandstone. This group seems to be much contorted, as the directions of dip change frequently.

Alluvial deposits.—The alluvial deposits consist of coarse and fine gravels, layers of big well rolled boulders, and tough, brown, gritty clay, which contains numerous angular grains of quartzite. In the Nam Sèka mines these different constituents of river deposits do not change regularly. They are deposited without order, and thus prove that they have been deposited by torrent and not by a large stream. The section of the strata in the pit gives a very good idea of this irregularity of bedding. At the farthest end of the pit, big boulders cemented by a coarse gritty clay are found, and these are covered by a thick layer of fine brown clay. A little nearer the river a bed of coarse gritty clay is found in the same level as the large boulders, and this is covered by a layer of gravel; the clay frequently contains pockets of gravel and sand or big boulders. The strata thus clearly indicate the action of a torrent, which washed away at one place, say, the heavy boulders, while it deposited a. pocket of sand. Behind a protected corner the next heavy flood deposited large boulders again, which were covered by a layer of clay, and so on.

The pebbles and boulders chiefly consist of milky quartzite Gneiss and granite are scarce. There are occasionally some specimens of a black or blue silicious shale, but no traces of any limestone. The absence of limestone must particularly be noticed because the crystalline limestone is the original matrix of rubies.

These alluvial deposits are the ruby-bearing strata, but it is only in the sand or gravel that rubies are found, not in the clay. This proves clearly enough that Nam Sèka rubies are not found in the original matrix, but that they, like the rest of the pebbles, sand, and so forth, have been transported by the water from some place higher up the river, and deposited by the river along its course at localities which were favourable for the deposit. These localities are therefore mere pockets of no great extension and may be found anywhere along the banks of the Nam Pai or of the Mogôk stream.

The Nam Pai having passed the broad valley of Möng Long has to cut its way through the gneissic rocks and shales which form the

hills west of the Möng Lōng valley, forcing its way in a meandering course through the hills. The valley is frequently a narrow gorge, through which the waters flow with tremendous rapidity, while at other places, where the valley widens out a little, the river forms quiet pools, sometimes of considerable depth. Just before reaching the place where the ruby-bearing sands are now deposited, the Nam Pai rushes down from the north-east, but is checked in its course by a promontory on its northern bank, round which it has to make its way, and it takes then a northerly course. Just opposite to the promontory on the left bank of the river, there was a small ravine, the outlines of which can still be traced. Along the slope of the hills it seems to have had a very narrow outlet towards the river, while it widened out in its upper part. This ravine, being well protected against the torrent coming from the east, nevertheless afforded an easy access to the water from the north, the bar at its end being low, particularly when at high flood the water was pressed against the promontory, and, being unable to find its way through a narrow passage, was forced into the ravine on the opposite bank ; the ravine was thus filled up by detritus of the Nam Pai. Subsequent floods may have partly washed away the deposits which were most exposed, while others may again have increased its quantity, but the bulk was deposited safely in the hollow of the ravine, probably up to a height of fifty or sixty feet above the low water level of the Nam Pai. In this ravine rubies were sought for in a pit about four hundred feet in length contracting at its northern end to a narrow passage just sufficient to afford passage for one man. It widened out to about one hundred and fifty feet on the surface, but the bottom, where the men worked, hardly afforded room for two men to excavate the sand. The pit was thus a funnel-shaped hole in which the men worked in permanent danger of landslips.

To facilitate the digging, a small channel led the water to the top end of the pit so that it flowed down the walls and softened the hard clay. The sand and gravel obtained was then washed in baskets precisely similar to those used at Mogôk. Dr. Noetling employed twelve coolies for three days at the mine, but found no rubies at all. What he did find when the brown clay was washed away was a residue of quartzite of various colours, but chiefly milky white, numerous spinels of dark purple, nearly black, a few crystals of hæmatite, and an occasional fragment of titanite, or schorl (black tourmaline). All were found in the shape of angular fragments with sharp edges, so that they could not have been far water-borne. His conclusions therefore were that the Nam Sèka mine was probably a mere pocket and entirely worked out, but that there might be other such pockets in small ravines or behind a point jutting out

into the Mogôk stream, a small tributary of the Nam Pai coming from the north. No such local deposits have since been found, but Dr. Noetling's general conclusions may here be given.

The rubies are not found in their primary matrix, but in secondary deposits of river gravel and sand. They have therefore been removed by the action of the water from the place where they originally existed. These river deposits do not form a continuous layer along the banks of the river, but are found in isolated places, forming pockets of very limited horizontal extension and hardly reaching higher than fifty or sixty feet above low water level.

There is, however, every probability that along the banks of the Mogôk stream even on the Nam Pai more such pockets may be discovered. The chances, however, decrease below the junction of the Mogôk stream with the Nam Pai. Unless a large number of such pockets are discovered, systematic working would not pay.

Tourmaline, rubellite, or schorl mines.

The tourmaline mines are situated north of the town of Möng Lông in the Hsipaw Sub-feudatory State, in the broad valley which runs from north-east to south-west for a distance of about five miles, with a maximum breadth of nearly two miles. Their geographical position is about longitude 96° 44′ latitude 22° 46′. The valley is traversed by the Nam Pai, which comes from the hills to the north-east, meanders through the broad plain, and disappears as a wild torrent in the narrow gorge which forms the western outlet of the valley. The mines are situated on both sides of the Nam Pai along the slopes; the most important are near the villages of Nawng Taw and Nawng Heng, from two to three miles to the north of the town of Möng Lông. These mines were visited and examined in 1890 by Dr. Fritz Noetling of the Geological Survey of India, from whom what follows is condensed :—

The azoic formations are the same as those observed in the neighbourhood of Nam Sèka (*v. ante* p. 224).

Gneiss is particularly developed north and north-east of the Nam Pai, while the sub-metamorphic shales are found in the south and the west. Möng Lông town itself is situated on a low hill projecting to the north, which is formed of green shales, dipping towards the west and covered by a thick layer of river conglomerate of about fifty feet in thickness.

Alluvial deposits.—There are two groups of alluvial deposits in the Nam Pai valley, an older consisting of conglomerates and red clay, and a more recent consisting chiefly of black tough paddy soil. While the first group is found up to heights of about two

hundred feet above the present level of the river, the second is strictly limited to the low plains.

The older river deposit conglomerates.—The conglomerates which form, so far as is known at present, the basis of the other alluvial deposits consist chiefly of well-rounded smooth pebbles of quartzite in various sizes, from small grains up to the size of a man's head and over. Other rocks are scarce, and only occasionally a small pebble of blue silicious shale, or rotten schistose sandstone, is found. Well-rounded pebbles of black tourmaline (schorl) are not uncommon, and reach the size of a walnut. These sometimes retain their original crystal shape, but are much water-worn. Rose-pink tourmaline is much more rare, and Dr. Noetling did not himself find any, and was told by the Shans that specimens of any size were scarce.

The character of the conglomerate indicates that it is formed from the *débris* of a country of gneissic and granite rocks. The pebbles are cemented by a coarse gritty clay of yellowish colour, thus forming a compact hard mass, which is hardly affected by ordinary tools, as the pick-axe rebounds on the smooth rounded quartzite pebbles.

Both Dr. Noetling and Mr. Barrington Browne, who had previously visited the spot, believe, from the nature of the quartzite gravel, that it is washed down from a gold-producing district, and it is admitted that gold in small quantities is found. Dr. Noetling goes so far as to suggest that it was in the washing for gold that the tourmaline was first found.

"*Red clay.*—The conglomerates are everywhere covered by a layer of tough red clay, not particularly gritty, but containing numerous angular grains of quartzite and felspar. The clay does not show any sign of bedding, and forms one continuous layer from the floor to the top. Its thickness varies much, as at some places it certainly exceeds fifty feet, while at others it is between fifteen and twenty feet. It is most remarkable that clay and conglomerate never alternate, but that they are separated by a sharp limit, the clay being always on the top of the conglomerate, which it conceals perfectly. The soft rounded features of the low hills round Möng Lông are due to this superficial coat of red clay."

Recent river deposits.—These deposits are more valuable from an agricultural than a geological point of view. There is the well-known dark grey or black soil, a tough clay mixed with a high percentage of decomposed organic matter, which would afford excellent paddy-ground if irrigated. These deposits do not extend beyond the Möng Lông valley.

The older deposits are found in a continuous layer along the slopes of the hills which border the Möng Lông valley. They also form isolated hills or short ranges in the centre of the valley, thus proving that they originally filled the whole valley, but became afterwards divided, probably by the action of the Nam Pai.

"Along the slope of the hills they form a very distinct escarpment, level at its surface, and in accord with that of the hills in the centre of the valley. The deposit of two strata requiring conditions so absolutely different, in one and the same locality, and evidently immediately succeeding one another, forms a problem which cannot easily be solved. The compact mass of conglomerate must have been deposited under the influence of a very strong current, while the clay must naturally have been deposited in still water. That conglomerate and clay cannot have been deposited in or by one and the same water is proved by the sharp separation. If they were deposited gradually, there must certainly be found some kind of intermediate bed, from coarse gravel gradually leading to fine sand and clay, but nothing of this kind is observed, and the clay rests immediately on the top of the biggest pebbles. I believe that the Möng Lông valley formed a kind of lake, on the bottom of which the Nam Pai deposited the bulk and particularly the heavier parts of the refuse, thus forming the conglomerate, while the silt and finer material were carried away. Gradually the basin of the lake became more and more filled up, and consequently the level of the water rose. Now there must have been a day when the bar which closed the western outlet of the lake gave way, and the water, digging its way through its own deposits and carrying large quantities of them away, thus formed the channel through which now the Nam Pai runs and through which the heavier material was transported in the past. Occasional high floods may have sometimes restored the old lake when the outlet was still narrow and was blocked, but the heavier material was no longer stored up, and the current was always strong enough to carry it away through the channels which formed, in the dry season, the river bed. Along the borders of the lake, and wherever there was quiet water, the finer material was deposited on the top of the older conglomerate, thus forming the younger clay.

"There can be no doubt as to the fluviatile origin of both the conglomerate and the clay. The theory of a glacial origin must be dismissed at once, as neither the conglomerate nor the clay shows any signs of glacial action. I did not find any organic remains in either conglomerates or clay. That none could be preserved in the conglomerate is intelligible, but it is rather strange that no shells should have been preserved in the clay."

The mines.—The pits from which the tourmaline are dug are numerous and deserted, and those which have apparently been worked quite recently may be seen anywhere along the slopes of the valley. The place for making a pit was always chosen with a view to getting an easy and ample supply of water for washing purposes and was so situated that the finer refuse and used water could easily be got rid of. The pits are therefore all at a certain height above the present river level, while the water is brought down from higher places in channels of considerable length. They are in fact open cuttings on the principle of the Mogôk *hmyawdwins*, the water being delivered by a number of short bamboo spouts at the top of the face of cutting, evidently to assist in the removal of the clay, and the subsequent washing of the thick quartz gravel bed for the rubellite. The face and the sides are vertical, and vary in height from thirty to fifty feet. From the layer of gravel and sand, the miners by dashing water against its edge from shovel-shaped baskets are enabled to see the stones they search for, and pick them out by hand. The mines could only be worked during the rains and for a short time after. Nevertheless, on both sides of the river, which forms here the boundary with the Ruby Mines district, the number of mines at a lower level is very great, and one set of old bench mines on the Shan States side is nearly a mile in length.

All the old mines were worked by Chinamen, and it seems possible that at a place Mawtu-nim they discovered and mined a vein of rubellite. The growth of jungle has, however, made it impossible to be certain of this. All the produce of the mines, when they were worked, was sent to China, where it found a ready sale. A good stone of three ounces weight has been sold for seven thousand rupees, and pieces an inch in length and half an inch square are valued at about two hundred rupees. The disadvantages of tourmaline are its want of hardness (lower than that of quartz, which is seven) and its easy cleavage, parallel to the prism, which renders it unfit for cutting. There are therefore no purchasers in the European market. Attempts have been made to lease the mines to Chinamen, but without success, and specimens discovered by local speculators have so far met with no purchasers.

There is another tourmaline mine at Maing Min near Möng Mit, which is worked fitfully. Licenses to mine there realized eight thousand nine hundred rupees in 1897-97.

Coal in the Shan States.

Coal is found in many parts of the Shan States. The coal-fields in the Northern Shan States examined by Dr. Fritz Noetling extend over a tract situated between longitude 97° 45′ and 98° and latitude 22° 20′ and 23° 15′, in

the States of Hsi Paw and North and South Hsen Wi. They are, commencing from the north—

(1) *The Lashio coal-field.*—Longitude 97° 41′, latitude 22° 50′, in the valley of the Nam Yao.

(2) *The Man Sè-Nam Ma coal-field.*—Longitude 97° 45′, latitude 20° 20′, in the valley of the Nam Ma and Nam Pong. These Dr. Noetling inspected, and his report is condensed below.

(3) *Coal is also found in Wying Hsen Wi.*—Longitude 97° 45′, latitude 23° 15′, along the banks of the Nam Seng Sīt.

(4) *Nam Yao Valley.*—Near the village of Möng Yaw, from 22 to 25 miles east of Lashio. This coal-field is apparently only the continuation of the Lashio coal-field, and is situated like it in the Ho Küt-Kunlông valley.

(5) *Man Sang and Möng Pat.*—Longitude 97° 49′ and latitude 22° 25′. There seems near Man Sang to be the western end of a coal-field which extends eastwards as far as Möng Pat.

(6) *Nawng Hsawn*, in Kehsi Mansam State.

(7) *Na Niu*, on the Nam Tēng, south of Lai Hka.

(8) *Sè Lan*, on the Nam Mao, or Shweli, river. At all these places coal has been found, but has not been examined by an expert and what specimens have been sent for analysis have been too small for obtaining definite results.

The Lashio coal-field, longitude 97° 41′, latitude 22° 50′. The Lashio valley is nearly circular, but the west-eastern axis is the larger, and is about three miles in length; the north to south axis varies from one to two miles. On all sides the valley is surrounded by hills, but those to the north and south are considerably higher than those to the west and east. Steep precipices run along the northern and southern hill slopes, while the ascent to the low western and eastern hills is comparatively gradual. The Lashio valley is traversed by the Nam Yao, which finds its way through a narrow gorge on the eastern side of the valley. It runs first along the slope of the southern hills, then turns to the north and runs for a short distance in that direction, only to bend again to the west and run nearly in the centre of the valley. After some distance it suddenly turns to the north-east and finally finds its way through a gorge at the north-west corner of the valley after having turned to

the west again. The bottom of the valley is level only for short distances along the banks of the Nam Yao. As a whole the valley consists of very irregular low hills, which divide it into numerous gullies. Such a formation, receiving drainage from the hills on every side, naturally tends to form a swamp in the rains, and the water stagnates everywhere between the low hills, so that in many places there are nearly permanent marshes in which the marsh date grows luxuriantly.

Geology.

The blue palaeozoic limestone is the chief formation developed in the Lashio valley. It forms the hills surrounding it, and also the original bottom. In the east and south it is covered by red sandstones of doubtful age. The tertiary strata cover the palaeozoic in the bottom of the valley, and they are again covered by a layer of river clay or hill wash of varying thickness. This cover of alluvial deposits is a great hindrance to the examination of the tertiary strata, as it hides them under a nearly impenetrable coat, and it is only where the Nam Yao has cut into them that they are exposed. From inspection of such places Dr. Noetling concludes that the tertiary beds must be very uneven. The soft strata have been partially destroyed and washed away by the Nam Yao, which has deposited in their place a thick bed of river clay. This fact, together with the impossibility of tracing the tertiary strata on the surface, renders it exceedingly difficult, if not impossible, to connect the isolated out-crops seen here and there along the steep banks of the Nam Yao.

Moreover, it is difficult to fix the locality of the out-crops, since this can only be done by searching the banks of the river in a small boat, and the banks are considerably higher than the water level and covered with impenetrable jungle. It is therefore absolutely impossible to say whether an out-crop, discovered after a sudden turn of the river, is connected with another previously discovered further down or up the steam.

The first out-crops which Dr. Noetling visited and examined are about half a mile to the south-west of the old Chinese fort. The coal is exposed in the bed of the Nam Yao, and is only visible when the river is at its lowest. The seam exposed is not less than thirty feet thick and consists of coal throughout, the few partings being thin and insignificant. When soaked with water the coal has a bright glittering appearance, but when dry it is dull and earthy-looking. As it dries it cracks like sodden wood exposed to the air, that is to say, big lumps of coal crack and blister superficially, but do not fall into pieces unless moved. Possibly this defect may disappear when the coal is not water-worn.



Photo-etching.

Survey of India Offices, Calcutta, November 1895.

CHIN WOMEN'S PIPES.

The coal contains—

Moisture and volatile matter	66·75
Fixed carbon	24·05
Ash	9·20
Total ...	100·00

According to this analysis the coal is of very poor quality, inferior even to the lignite of Hsi Hkip, which contains 30·26 per cent. of fixed carbon. It is, however, not unlikely that long exposure may have affected the chemical qualities as well as the physical. The seam dips at 10° to 15° towards the north-west, the strike being south-west to north-east. The floor and roof strata are only imperfectly ascertained, but the floor appears to be a greyish blue clay. At a distance of about thirty yards another coal-seam ten to twelve feet in thickness is exposed. The coal is of the same quality and appearance, but there seems no doubt that the two out-crops represent two different seams, direction of dip and strike being the same as in No. 1 seam.

For a distance of about a quarter of a mile farther up the river nothing can be seen on the bank, the jungle completely hiding the strata on both sides. At a sudden turn of the river, where the jungle had been recently washed away, Dr. Noetling discovered the out-crop of a big seam, the greater part of which was below the water level. The coal did not differ in appearance from the coal of the other seams. It was, however, a little brighter when dug; no exact observations could be taken as regards the direction of dip and strike. The more earthy parts of the seam contained numerous remains of fossil shells, too much disfigured by pressure to be of any particular value. The only species distinguished belonged apparently to the genus *planorbis*. There were also fragments of another big gastropod, which could not be determined.

The coal crops out at many other places which need not be particularized.

The analysis of a sample from a spot further down the river gave the following results:—

Moisture and volatile matter	54·48
Fixed carbon	35·44
Ash	10·08
Total ...	100·00

A sample taken from near the village of Na Leng, on the eastern side of the valley, was analysed in Calcutta with the following results :—

Moisture	...	21·30	54·48
Volatile matter excluding moisture ...	...	33·18	
Fixed carbon	...	33·66	
Ash	...	12·46	
Total	...	100·00	

The ash was of dark-red colour and contained a good deal of iron pyrites. This out-crop, Dr. Noetling thinks, forms the eastern continuation of No. 1 seam, as it has apparently the same direction of dip and strike. The seam would thus extend over a distance of about two miles and this appeared to be confirmed by the inspection of intervening gullies.

Dr. Noetling continues :—

"My first notion when I saw the out-crop of the seam mentioned above was that the coal was nothing more than a pocket of lignite, having been formed locally in one of the hollows at the bottom of the valley and afterwards covered with river clay just as now-a-days the marshes are formed on the surface. Although later observations have to some extent rendered it probable that the coal was not formed locally, further proofs are still required to make certain. It must be understood that the disposal of the local origin of the Lashio coal is of fundamental value for the future development of the coal-fields, because, if correct, the Lashio coal would be of no importance as regards the supply of fuel."

The actual proof can only be obtained by borings. The basin-like shape of the valley and the inferiority of the coal seemed to favour the theory of a local origin, but when Dr. Noetling examined the Namma coal-field, which has certainly not been formed locally, and is not more than thirty miles distant in an air line, he came to the conclusion that the Lashio field is not a mere pocket.

"The reasons which argue against a local origin are as follows :—

"(*a*) the distinct dip and direction of the main coal seams;

"(*b*) the continuity of the strike, by which the locality where a seam should be found again could be pointed out before the locality was seen and examined."

The main fault of the Ho Küt-Kunlông valley may, however, have broken it into a series of pockets. If on examination of samples which are not weather- or water-worn, the coal proves fit for use as fuel, Dr. Noetling calculates that, at a consumption of ten thousand tons a year, there is coal in the Lashio valley for seventy-nine years, or, if there is more than one seam, for one hundred and fifty years.

The Man Sè-Nam Ma coal-field (longitude 97° 45′ and latitude 22° 20.′)

The Man Sè-Nam Ma coal-field is chiefly situated in the valley of the Nam Pông and one of its tributaries, the Nam Ma, in the State of South Hsen Wi.

To the south of the hills which border the Lashio valley on the south, there extends a wide region of low rolling hills. It is evident that this forms a down-thrown region similar to that of the Ho Küt-Kunlông valley. The chief drainage of this area is the Nam Ma, which runs west and enters the Nam Tu above Hsi Paw. The Nam Ma is formed by the junction of two smaller streams, the Nam Pông and the Nam Pēng, which join a little below the village of Nam Ma and form the river of that name. It is along the banks of the Nam Pēng and Nam Ma that the out-crops of coal seams may be seen.

The older strata are the same as those of the Lashio field and nothing more need be said about them. The tertiary strata may be seen best along the banks of the Nam Pông between Man Sè and Nam Ma. They consist chiefly of grey and yellow sandstones, blue shales very finely bedded, like those met with in the Chindwin, and concretions of hydroxide of iron. The strata have a general dip to east-north-east for about half the distance between Nam Sè and Nam Ma, then the dip suddenly changes to the opposite direction. The tertiary strata therefore form an anticlinal fold, which proves that the coal seams cannot have been deposited locally. On this analogy the Lashio coal-field may also be a thrown-down block.

The first out-crop may be seen on the left bank of the Nam Pông a little above the village of Man Sè, where there is a coal-seam about four inches in thickness.

The second out-crop is a little below the same village, and here a little more could be seen. The lower stratum is formed by a thickish bedded sandstone of yellow colour on which rests a seam of three inches in thickness; then follows clayey shale about five feet thick; then again a coal seam of six inches covered with the same clay; then follows river clay. The dip is towards east-north-east at an angle of 15°.

The results of the analyses of a sample of each seam are as follows:—

	Six-inch seam.	Three-inch seam.
Volatile matter including moisture	53·60	55·42
Fixed carbon...	34·22	34·94
Ash	12·18	9·64
Total ...	100·00	100·00

The best out-crops are seen in the bed of the Nam Pēng, near the village of Nam Ma. Here, within a distance of under a mile, there are at least ten different coal seams, and, if a conclusion as to the thickness of the seams may be drawn from the thickness of the lumps lying in the bed of the stream, none of them is less than five feet in thickness. The coal is of excellent quality, very hard and bright; and it can stand a considerable amount of wear and tear, as is proved by the fact that big lumps of fresh coal are rolled down stream amongst big boulders of quartzite and porphyry without being smashed. However, the coal does not stand long exposure to water and air, as under their influence the laminæ of which the coal is composed become separated, and, assisted by the cleavage, crumble into small prismatic pieces. The dip is towards west-south-west at an angle of about 20°.

"The following are the results of the analysis of five samples of "the five biggest seams of the Nam Pēng stream:—

	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.
Volatile matter including moisture	56·82	52·59	60·45	58·37	56·08
Fixed carbon... ...	38·58	37·64	36·15	33·47	34·08
Ash	4·60	9·77	3·40	8·16	9·84
Total ...	100·00	100·00	100·00	100·00	100·00

"Although this coal is bituminous coal, which should properly be "called lignite or brown coal, it will certainly make an excellent "fuel. I estimate the aggregate thickness of the seam to be about "fifty feet.

"The causes which render the examination of the Lashio coal-"field so difficult, namely, the coat of alluvial deposits hiding the "tertiary strata, are found to a higher degree in the Man Sè-Nam "Ma coal-fields. The alluvial deposits consist here of a conglo-"merate which near Nam Ma rests unconformably on the coal-bear-"ing strata. The conglomerate consists chiefly of rounded boulders "of white quartzite and porphyries, and is very similar in appear-"ance to that of the Möng Lōng valley. Near Nam Ma the alluvial "deposits reach the considerable thickness of about two hundred "feet, and they can easily be traced for a long distance, as they "form a most distinct escarpment lining the slope of the hills to the "east."

The area of the coal-field is undetermined, but cannot be less than twenty miles along the line of the Nam Ma. The want of roads and difficulties of transport made it quite certain that these coal-fields could not be worked at a profit, even if the coal should prove of very superior quality. No further experiments have therefore

been made. But, when the Mandalay-Kunlông Railway penetrates to the Lashio valley, the question will be finally settled. The line will pass through the centre of the Lashio field, but even if the coal there should prove valueless that on the Nam Ma is within easy reach by a branch line.

Upper Chindwin coal-fields.

Dr. Noetling's report on the Upper Chindwin coal-fields holds out much greater promise of both on account of their extent and the better quality of the coal. Their chief drawback is comparative inaccessibility, but there is room for making a way to "a coal-bearing formation extending from Thayet-"myo right up to the unknown north joining the eastern continu-"ation of the Himalaya hills."

The coal-bearing formation in the Upper Chindwin district is only developed on the right or western bank of the river. No coal is known to occur on the left bank from the mouth of the Yu southwards.

The area of coal-bearing strata may be more closely defined as bounded on the east by the Chindwin river and on the west by the large depression separating the high mountains of the Chin Hills from the plateau of Upper Burma, known by different names, such as Kubo valley, Myittha valley, and so on.

The map shows that this tract is of considerable length, but of comparatively small breadth. Dr. Noetling examined only the part which is limited by the Myittha river in the south, the Chindwin river in the east, the Yu river in the north, and the Kubo or Myittha valley in the west, *i.e.*, between 22° 15′ and 24° north latitude and 94° 5′ and 94° 30′ east longitude. The country thus limited covers an area of about five hundred and fifty to six hundred square miles.

The out-crops of the seams are, however, limited to a very small area, and the greater part of the country consists of valueless sandstones. The out-crops in the southern part are limited to the Nantahin and Paluswa valleys. Whether coal seams also occur in the Bônchaung valley is uncertain, but probable. The Nantahin-Paluswa out-crops extend over an area of about twenty-five miles in length and one mile in breadth, and lie not more than three and half miles from the bank of the Chindwin. The next out-crop occurs in the middle course of the Maku (Mangu) stream opposite Kindat, and probably in all the feeders of the Chindwin between the Morokichaungwa stream and the Yu river.

Numerous crops of coal-seams are met with along the western and eastern slopes of the hill-range bordering the Dathwechaukchaung valley to the west, in the Dathwechaukchaung and its

northern continuation the Telong valley, as well as in the deep ravines running down the slope of the hill ranges east and west of the Dathwechauk-Telong valley. The southern part of the Dathwechauk basin, as it may be called, is about thirty-five miles in length, of which only the middle and north were examined. A glance at the map will therefore show that the out-crops form two distinct groups, which, however, belong to the same series of strata.

The first group of out-crops, which we may call the Nantahin out-crops, extends along the eastern slope of a nearly continuous hill-range which is known under the name of Nuebe Yoma. The most southern locality is the well and long known locality west of Kalewa. From there the coal seams run in a nearly northern direction, and can be seen at various places in the valley. They are again seen all the length of the Nantahin and Paluswa valleys, and they are certainly the same seams which are met with in the Maku valley. The total length may be estimated at about fifty-five miles, with an average breadth of about one mile, thus covering fifty-five square miles.

The second or Telong group extends between the two hill ranges known as Nuebe-Yoma and Tambaya range in the east and Khamhpat range in the west. It extends right up the Telong valley and probably far to the north for a considerable distance, while its southern continuation may be found in the Bônchaung valley. Its length amounts to more than sixty miles, and it has an average breadth of two miles; thus the area containing the coal measures amounts to one hundred and twenty miles. The total area of the coal-fields in the Upper Chindwin within the area examined by Dr. Noetling amounts to at least seventy-five square miles.

Topographical features of the country.

The area, as defined above, is hilly, and its main features are more or less parallel hill ranges forming a huge wall-like barrier extending unbroken for miles. Towards the east they slope gradually, while their western faces are almost perpendicular and present nearly inaccessible precipices which render communications difficult.

There are three distinct ridges. The first and most easterly, which runs sometimes close to the bank of the river Chindwin, may be called the Kalewa ridge. It consists of two distinct parts. The southern is generally known as the Kaledaung, and extends between the Myittha river and Nantahin creek. The northern, known as the Maungbôndaung range, extends between that creek and the Paluswa. The northern continuation, Nansaleindaungdun, gradually dies away north of Manhpagale.

The second or middle ridge also begins at the Myittha, where, however, it is not distinctly marked, as it breaks into numerous spurs; it extends right up to the north and is known as the Bôn-daung or Nuebe-Yoma. This range is continuous as far as the eye can see, and is the southern continuation of what is known in the northern part as the Dathwechauk and Tambaya range, which extends northward far beyond the Yu.

The third, or western range, which faces the depression of the Kubo and Myittha valley, also begins on the Myittha, and extends in one continuous wall, which is only broken through by the Yu river far up to the north. Generally speaking the height of the ranges increases from east to west, but there is no great difference in height between the middle and western range, which is two thousand feet on an average.

These hill ranges are separated by long but narrow valleys, which all show a steep western and gently inclined eastern slope. The main valleys,—the Bôn, Dathwechauk, and Telong valleys,—discharge into the Myittha and Yu rivers respectively, but in some places, as in the Nantahin or Paluswa valley, the outlet is a narrow ravine which cuts with a steep fall right through the eastern range, thus discharging the water directly into the Chindwin. These valleys are hardly ever dry, but during the rainy season the insignificant brooklet, which finds its way through the rocks and boulders only to dry out in the sandy plain east of the range, rises to about thirty feet above its channel in a tremendous torrent which moves huge boulders of hundreds of tons weight like small pebbles, and breaks like so many matches large teak logs of fifty or sixty feet in length and over six feet in girth. They are thus available as means of communication neither in the dry weather nor in the rains.

The main valleys are frequently crossed by comparatively low traversing ridges or watersheds connecting the opposite hill ranges. Such a bridge, for instance, divides the Paluswa and Nantahin valleys.

The system of drainage may therefore be divided into three groups:—

(*a*) *Valleys discharging straight into the Chindwin.*—To this group belong all the ravines which descend from the eastern slope of the middle range, with one exception.

(*b*) *Valleys discharging either into the Myittha or the lower part of the Yu river.*—To this group belong only a few gullies, chiefly those of the Bôn, Dathwechauk,

and Telong, which take their origin in the valleys between the main ridges.

(*c*) *Valleys discharging into the Nayinzoya and southern branch of the Upper Yu river.*—To this group belong all the small ravines which run down the western side of the western hill range.

There is therefore an extensive drainage of the country, but none of the numerous channels are available except the two main rivers, the Myittha and the Yu. The Myittha river is navigable for small country boats all the year round, but navigation is highly dangerous at the rapids above Kalewa, and in the dry weather even small boats encounter difficulties.

No such rapids exist on the Yu river, but it is only practicable for small boats, and these run aground during the dry season.

The communications of the coal-fields are therefore not good.

Description of the strata.

The strata of which the country in the Upper Chindwin is composed consist chiefly of sandstone; of inferior importance are conglomerates, clays, shales, and coal seams.

Sandstone.—The sandstone is of two kinds, different in appearance as well as in age. The recent sandstone is rather soft, of brown or yellowish tint, giving way easily to the combined action of rain and air. It is traversed by a series of joint-planes which run parallel to the strike, but dip at high angles up to 80° towards the west; these joint-planes, along which the sandstone easily slides down, account for the precipice-like appearance of the western side of the hill-ranges, while their soft composition is the origin of the picturesque points and saw-like crests which are one of the main beauties of the Upper Chindwin. On the western bank of the Chindwin, above Kalewa, the yellow sand-stone is only developed to a small extent, its chief development lying on the eastern bank; from Kalewa downwards the yellow sandstones occur in a larger area on the western bank.

The older sandstone is of a bluish-grey colour, finely-grained, and of a hardness which would render it an exceedingly good material for building purposes. The water-worn rocks show a beautiful smooth surface, owing to their fine equally grained composition. There is a third variety of sandstone, which, however, only occurs in the coal-bearing strata. It is very hard and flaggy, developed only in beds of five to seven inches, which are divided by a set of joints into very regular square pieces of sometimes considerable length.

Conglomerate.—This consists chiefly of rolled pebbles of white quartzite, amongst which are mixed in smaller quantity blood-red coloured jasper and black hornstone. The constituents are cemented together by a whitish grey cement of not too great a hardness. It does not disintegrate so easily as the sandstone, and forms therefore a kind of embankment or escarpment along the western slope of the Kale range. On disintegration it forms a kind of white gravel, which is a very characteristic superficial sign in the jungle of the proximity of the conglomerate. The occurrence of this bed has been traced from the Myittha as far north as the Yu river, and at numerous places between these two terminal points.

Clay and shales.—Clay and shales are specially to be observed in the coal-bearing group; the clay is of dark-blue colour, soft, and, when dry, very friable. It is deposited in thick strata, but thinly bedded, which frequently contain nodules of hydroxide of iron and layers of the flaggy sandstone interbedded. As the different, often paper-like beds, vary much in colour at fresh out-crops, the clay exhibits a striped ribbon-like appearance. Sometimes the clay hardens and forms soft thinly-bedded shales. Most of the coal seams are interbedded with this clay.

Coal.—The coal occurs in beds of various thickness, from half an inch up to twelve feet; but seams of two feet and under are the rule. There are about six or eight of four feet thickness, one or two of five to six feet, and one seam of twelve feet in thickness.

The greatest number of seams of good continuity occurs in the Maku valley, where there are twenty-five seams. In all Dr. Noetling estimates that there are certainly not less than forty seams, with a total thickness of eighty feet of coal, of which about twenty-four could be developed.

The coal is highly laminated, of a brilliant black colour, and, notwithstanding the lamination, very hard in the big seams, breaking in big lumps, which stand transport over the rocks for a long time. The bigger seams are not easily disintegrated, and it speaks for the excellency of the coal that the out-crop of one seam, ten feet thick, stands like a wall in the bed of the stream while the surrounding strata have been washed away by the water. The minor seams do not show the same good quality, and the coal becomes a little more friable and flaky. Some of the four feet seams consist also of an excellent hard coal. It seems, however, that the coal deteriorates in quality from the higher to the deeper seams; at least those seams which from their position must be considered as the oldest known at present, namely, the seams in the Yu river west of Yenan, are of very inferior quality, and some of them can hardly be called

coal. In the main ten feet seam, which Dr. Noetling calls the Kale seam, there are no partings. It consists of clean coal throughout; but in other seams there occur frequently bands of thinly laminated bituminous clay: for instance, several of the five or six feet seams in the Nantahin valley show this peculiarity, which must, of course, reduce the value of the seams. There are two joint places which cause the coal to disintegrate into prismatic pieces, but they are not so prominent as to be of great influence on the sound coal.

The following table of analyses gives the chemical qualities of the coal:—

Table of analyses of different coal seams of the Upper Chindwin coal-fields (assays marked were made in the Laboratory of the Geological Survey; the others in the Government Laboratory, Rangoon).*

	Nantahin valley, Section I, seam No. 2.	Nantahin valley, Section I, seam No. 5.*	Nantahin valley, Section I, seam No. 5.	Tsinaing stream, Section III, seam No. 2.	Tsinaing stream, Section III, seam No. 19.	Tsinaing stream, Section III, seam No. 23.	Mithwechauk stream, Section IV, seam No. 2.	Mithwechauk stream, Section IV, seam No. 8.	Paluswa stream, isolated four feet seam, without number.*	Paluswa stream, isolated three feet seam, without number.*	Paluswa stream, Section V, seam No. 4.*	Paluswa stream, Section V, seam No. 22.*	Dathwechauk stream, isolated four feet seam, without number.	Dathwechauk stream, isolated lump of coal found amongst the boulders.	Yu valley, Section XII, seam No. 1.
Moisture	10·10	10·60	...	...	...	...	...	...	11·24	9·42	9·40	9·38	...	...	...
Volatile (exclusive of moisture in the Calcutta, very likely inclusive of moisture in the Rangoon, analyses).	36·16	33·96	45·13	47·89	34·46	31·88	42·45	38·30	39·94	37·60	28·34	34·02	44·04	41·43	40·54
Fixed carbon	46·38	47·24	51·81	49·21	58·80	65·59	47·94	46·18	45·06	49·54	40·36	50·38	50·53	55·15	
Ash	7·38	8·20	3·06	2·90	6·74	2·53	9·61	15·52	3·76	3·44	21·90	6·22	5·43	3·42	59·46
Total ...	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00
Colour of ash	Dirty grey.	Dirty grey.							Buff.	Buff.	Pale buff.	Buff.			

Does not coke, but sinters slightly.

"From this table it will be seen that the coal is a bituminous coal, "which therefore cannot be expected to coke; the highest percent-"age of fixed carbon has been noticed in seam No. 23, Tsinaing, "Section III, with 65·59, the lowest with 40·36 in seam No. 4, "Paluswa, Section V; the lowest percentage of ash with 2·53 occurs "in the first, the remarkably high average of 21·90 in the latter "seam; the volatile matter inclusive of water shows its highest "percentage, 51·18, in one of the Paluswa seams, its lowest in the "seam No. 23, Tsinaing creek, Section III, with 31·88. Taking "the average of all the thirteen analyses of Chindwin coal its com-"position is as follows:—

I.

Moisture	10·08
Volatile matter (exclusive of moisture)	34·14
Fixed carbon	49·45
Ash	6·30
Total ...	99·97

"I arrived at this result by calculating the average of all the "analyses made in Calcutta and Rangoon separately; this gives "the following result:—

	II. Average of six analyses made in Calcutta.	III. Average of seven analyses made in Rangoon.
Moisture	10·02	10·02
Volatile matter (exclusive of moisture)	35·00	32·39
Fixed carbon	46·49	51·43
Ash	8·48	6·13
Total ...	99·99	99·97

IV.

	Average of I and II and II and III.
Moisture	10·02
Volatile matter (exclusive of moisture)	33·69
Fixed carbon	48·96
Ash	7·31
Total ...	99·98

"Now, it will be seen from the list above that amongst the sam-"ples of coal there are two with an extraordinary percentage of "ash, namely, No. 8 seam, Mithwechauk, Section IV, and No. 4 "seam, Paluswa stream, Section V, with 15·52 and 21·90 per cent. "of ash respectively; that this is an extraordinary percentage of "ash will be seen from the other analyses, where the percentage of "ash is considerably lower.

"If, therefore, the average be taken omitting these two seams, "the following average composition will result :—

	V. Average of five analyses made in Calcutta.	VI. Average of six analyses made in Rangoon.	VII. Average of V and VI.
Moisture	10·14	10·14	10·14
Volatile matter (exclusive of moisture)	36·33	32·86	34·59
Fixed carbon	47·72	52·18	49·95
Ash	5·79	4·81	5·30
Total ...	99·98	99·99	99·98

"The average VII calculated from the two average compositions "V and VI may be considered as the real average composition of "good coal from the Chindwin, while the total average calculated "from analyses IV and VII is expressed by the first analyses. "Comparing the two final analyses, it will be seen that I chiefly "differs from VII in the higher percentage of ash originating from "the influence of the two samples of coal containing a high per- "centage of ash.

"These analyses enable us to judge as to the quality of Chind- "win coal if compared with Indian and English coal, as the following "table of analyses will show :—

—	England, Welsh coal.	England, Bristol, Lower series (steam).	England, Bristol, Upper series (gas).	India, Rani-ganj.	India, Kurhur-ballee; average of sixteen ana-lyses.	India, Assam.	Burma, Upper Chindwin; aver-age of 11 ana-lyses.
Moisture ...	...	...	...	...	...	...	10·14
Volatile matter ...	13·66	24·48	33·73	32·65	24·01	36·02	34·59
Fixed carbon ...	82·66	69·35	60·67	51·08	63·66	60·00	49·95
Ash ...	3·68	6·16	5·60	16·27	12·33	3·8	5·30

"The above shows that, as regards the proportion of fixed carbon, "which is the most important factor in the production of heat, the "Chindwin coal is far inferior to English coal, a little inferior to "the best Indian coal, the Kurhurballee coal, but nearly equal to "the Raniganj coal. It is certainly far superior to the latter as "well as to any Indian coal except that of Assam, as regards the "percentage of ash, which is less than half the quantity in the best "peninsular coal. The average Chindwin coal therefore represents "a high quality of fuel and can compare favourably with any "mineral fuel now imported into Burma.

"*Stratigraphy.*

"The different rocks which form the Chindwin coal-fields are "extremely regularly bedded. Frequently one single bed can be "traced for miles, until it disappears owing to the run of the gully "in which it is exposed. In the Nantahin or Paluswa valley this "regularity of the bedding is most conspicuous. A stratum of the "hard flaggy sandstone, which is intercalated in the blue clay, is "exposed for more than two miles, and it stands as a sharp ridge "out of the associated softer strata. In the Nantahin and Paluswa "valleys the general direction of the strike is about north to south. "The dip is, in the Nantahin valley, towards the east, and the angle "of the dip varies from 39° to 53°; but the high angle of 50° is "only local; we may say the general dip is about 45°.

"In the Dathwechauk, Telong, and Yu valleys we notice the same "regularity of the strike, although the direction is a little more to "the east, being about 5° or north-north-east to south-south-"west; the angle of the dip is also the same, at least it is within the "same range, occasionally being a little smaller, as angles of 33° "and 34° have been observed, but in the regular bedding there is "none over 51°. The direction of the dip varies however. The "valley of the Yu river, being a transverse cut from the Kubo to "the Chindwin valley, affords the best opportunity for studying the "internal architecture of the country. If we march up the Yu river, "that is, in a westerly direction, we notice at first that direction or "dip which is common to all the strata west of the Chindwin, a dip "towards east. At about eight to ten miles from the mouth of the "river, near the village Yenan, the direction of dip suddenly changes "and turns towards the west, and it is here that a strong gas-well "emanates in the middle of the river, while some more wells, pro-"ducing a white mud mixed with oil, occur in the village and its "neighbourhood. This western dip keeps on until the Telong "creek is reached, which is about two miles distant as the crow "flies. Here the dip changes again and takes its old direction to "the east, which remains throughout the whole series of the follow-"ing strata. The architecture of the country is thus far very plain. "Along the line of the Dathwechauk-Telong valley the strata form a "syncline, the axis of which runs nearly in the middle of the valley. "The centre of this syncline is filled with the coal-bearing formation, "forming a basin stretched in a north-north-east and south-south-"west direction of about two miles in breadth, on the west and east "sides of which the unproductive sandstones rise in high ranges. "Of these the western forms only a part of the syncline, while the "eastern range forms an anticline, on the eastern side of which the

" coal-bearing strata are met again. But these coal-fields which " are now perfectly separated, form only two parts of one and the " same series of strata which have been placed in their present po- " sition by that mechanical action which finished by folding the " originally horizontally deposited strata into a syncline and anticline. " The strata which are now exposed to the surface in the Dathwe- " chauk-Telong basin and on the eastern side of the Kale range are " different as regards their geological age. While on the eastern " side of the range the whole series is still complete, the strata in " the Dathwechauk-Telong basin consist of the lower part of the " coal-bearing formation. The upper part, which once covered the " eastern range, has probably been destroyed during the action of " folding, and its soft strata have gradually been washed away. The " destruction of the coal-bearing strata has even gone so far that they " have completely disappeared along the centre of the anticline, " where now the oldest strata, which form the basis of the coal- " bearing formation, come to the surface. Only a small part of the " once existing series of coal-bearing strata has been preserved in " the centre of the syncline, *i.e.*, in the Dathwechauk-Telong valley, " where it was comparatively speaking protected. These series of " strata must naturally form a part of the lower beds of the coal- " bearing formation. No seams of considerable thickness have been " discovered in these strata, or at least the seams of considerable " thickness, such as those in the Yu valley opposite Ngapu, con- " sist of very impure coal. Thus it is only the upper part of the " coal-bearing strata which contains seams worth working.

Groups into which the different strata may be divided.

" The strata which are developed in the Chindwin country may " be divided, according to bedding and petrographical characters, " into two large groups. The higher group only contains soft ye- ' low sandstones, and occasionally thin conglomeratic beds; the " lower group contains bluish-grey sandstones, with conglomerates " and occasionally thin beds of blue clay on the top; blue clays and " shales, thin beds of sandstones and coal-seams in the middle; " and bluish grey sandstones, occasionally with beds of blue clay " containing hard calcareous nodules with marine fossils, especially " *Cerithium Hilli sp. nov.*

" In the higher group fine-grained sandstones prevail, occasional- " ly interrupted by a bed of blue clay. These sandstones become " coarser in the lower parts, small beds of conglomerate begin, and " gradually the finely-grained sandstone dies out, to be replaced by " big banks of conglomerate. In its turn the conglomerate is in the " lower part again replaced by fine-grained grey sandstone, which is

"now frequently separated by beds of blue clay. The clay-beds "become more frequent and replace the sandstone partly. It is in "this part of the lower group where the coal seams occur, but even "the latter are frequently not well separated from the underlying and "overlying strata.

"The clay becomes a little bituminous, and more and more la-"minated, gradually changing in many cases into a coal-seam, "while this seam graduates again up into a clay. The clays and "coal-seams gradually disappear and are replaced again by finely "grained grey sandstones which are hardly different from the upper "sandstones. Beds of clay occasionally still occur, but they con-"tain calcareous nodules with very characteristic marine shells of "the genus *Cerithium* and *Torritella*, and a large *Venus* or *Cyther-"ea*-like bivalve, of which only fragments of the shell and badly "damaged casts have been found. The gastropods are easily re-"cognizable, and they are the best sign that the coal-bearing "strata are passed. Wherever these fossils are found, it is a sign "that one is out of the coal-bearing formation, which has to be "looked for further eastward from the place where fossils have been "found, and in higher beds.

"As regards the age of these strata, there is no doubt that they "belong to the Tertiary formation, and as no fossils have been "found which would point to the older Tertiary Eocene, we may "consider them as recent Tertiary and put them amongst the Mio-"cene strata. This consideration would result in the following "subdivision of the strata:—

Recent Miocene ...	(1) Yellow sandstone ...	Terrestrial fossils?
Older Miocene ...	(2) Grey sandstone ... (3) White conglomerate ... (4) Blue clays and coal seams ...	No fossils known, but badly preserved fossil plants.
	(5) Grey sandstone ...	Marine fossils.

"Regarding the thickness of these different groups not much can "be said, yet an approximate conclusion may be drawn. The first "group, the yellow sandstone, is of a tremendous thickness; and if "a conclusion may be drawn from the superficial extension, this "group would have a thickness of not less than twenty thousand "feet.

"The upper grey sandstone, including the conglomerate, may be "estimated at about six thousand feet in thickness. The thick-"ness of the fourth group, the blue clays, or the coal-bearing forma-"tion is superficially exposed to a breadth of one and a quarter to "one and a half miles. Taking the lowest angle of dip which "has been noticed, 34°, this would give a thickness of from three "thousand eight hundred to five thousand feet; taking the highest

"angle of dip noticed, 50°, the thickness would range between "five thousand one hundred and six thousand eight hundred feet; "with a general angle of dip taken at 45° the thickness would range "between four thousand six hundred and three thousand six "hundred feet. We may then take the average and assume that five "thousand one hundred feet is about the thickness of the coal-bear-"ing formation.

"In this five thousand one hundred feet of coal measures are "about forty coal seams with a thickness of eighty feet in the aggre-"gate, of which forty-eight feet may be considered as available.

"These calculations do not apply to the western Dathwechauk "basin, but only to the southern part of the Kale field, as far north "as the northern end of the Paluswa valley, but they may very "likely apply also to the northern part as far as the Yu river."

Dr. Noetling calculates that the total amount of available coal above the level of the Chindwin would reach about one hundred and five million tons and, taken at a daily rate of production of one thousand tons, would be sufficient to keep up the production for two hundred and ninety years or at the minimum a daily supply of one thousand tons for one hundred and thirty years.

Difficulties of communication have prevented the Chindwin coal-fields from being worked as yet, but these will probably eventually be overcome.

So far the only coal mines working are at Lingadaw or Kabwet in the Shwebo district, where Mr. Herman began work in 1891: the mines were taken over in 1892 by a company. The coal has been used on Government steamers, on the railway, and on the steamers of the Irrawaddy Flotilla Company. The production is so far not very large, but it is steadily increasing.

The outturn has been—

Years.	Tons.
1893	9,938
1894	12,120
1895	17,289
1896	22,923

In the latter year the company employed a daily average of three hundred and thirty-four men, one hundred and twenty-two women, and three children.

Petroleum.

The oil-wells of Yenangyaung were a lucrative source of revenue to the Burmese kings, and petroleum was one of the Royal monopolies. It is said that in the time of King Mindôn as much

as six lakhs a year were paid into the Royal Treasury, but in the beginning of King Thibaw's reign the receipts were only half that amount, if so much, and during this time they certainly fell far below previous payments. The wells were always in the hands of a corporation, concerning which details will be found farther on. It is unfortunate that, though the *twinsayo*, the hereditary well-diggers, were very particular about their descent, they kept no historical records. All that is known of the first discovery of the oil is of the usual Burmese mythical character. It seems, however, probable that the first diggers were Arakanese, and therefore most likely prisoners of war serving as pagoda slaves. If this be so, it would seem to prove that the Yenangyaung oil-fields, though they may have been known before, could not have been worked earlier than about the middle of last century.

Dr. Fritz Noetling of the Geological Survey of India, who examined the oil-fields in 1889 and again in 1891, published reports on his researches, from which what follows is condensed. The oil-fields are always spoken of under the name of Yenangyaung, but the actual wells are situated about a couple of miles away at the villages of Twingôn and Bemé, in latitude 20° 29′ north and longitude 94° 56′ east. The country is a fairly level plateau with a height of something like two hundred and sixty feet above the low-water level of the Irrawaddy at Yenangyaung. The highest point is the pagoda of Twingôn, which is three hundred and thirteen feet above the river, and an undulation between this and Bemè village reaches two hundred and ninety-three feet above the Irrawaddy level. The whole neighbourhood is cut up by many deep and narrow irregular ravines. Dr Noetling says:—

"The whole country has obviously been originally one extended plateau, which has been eaten into by the action of the surface water, due to the composition of the strata forming the country and the irregularity of the rainfall during the year. The mechanical action of the water worked more in the direction of deepening and lengthening the water-courses than in widening them. By the eventual union of two opposite water-courses at their upper end into one, a more or less extended piece of country was isolated, which took in time the form of a hill with flattened top and very steep slopes. On these latter of course the running water worked most energetically, notching them more or less.

"Some parts of the country, especially the ferruginous, conglomeratic beds, resisted in a more energetic way the action of the surface water, which, by washing away the surrounding softer strata, modelled the harder ones to a kind of ridge, which was eventually eaten into a range of isolated hillocks or rocks. They are the remainder of a hard stratum of ferruginous conglomerate imbedded in the soft sandstones. The result of this process of the action of the water is a country of rolling hills, with the tops generally on the same level, which are intersected by long, irregularly bent ravines,

with steep notched slopes. The roads in such a country have to accommodate themselves to the run of the ravines. For instance between Kodaung and Twingôn direct communication by carts is impossible, the ravine between the two places preventing it. Therefore a cart from Kodaung to Twingôn, a distance of seven hundred yards as the bird flies, has to go round by Yenangyaung, that is to say, a good day's march.

"The strata forming the country between the Irrawaddy and the Pin creek belong chiefly to the tertiary formation. They represent the upper part of the tertiary formation, of no later age than miocene. Likely enough they are of the same age as the Siwalik formation in India. As a matter of fact the fossils I collected point to a younger tertiary. Over the tertiary strata there is spread, but not continuously, a layer of ferruginous red gravel abounding in large pebbles of white quartzite and fossil wood, belonging to the diluvial formation.

"The strata mostly consist of laminated and clayey sands sometimes a little indurated, so as to form soft sandstones. Some of the beds are highly calcareous and abound in concretionary masses of sandy limestone in the most varied shapes, many looking exceedingly like organic structures and frequently being considered by people to be such. In other beds there are nodular concretions of a very hard quartzitic sandstone, sometimes of an immense size, intercalated and arranged in irregular layers. There occur a few pebbly beds, and occasionally a layer of ferruginous sand and gravel cemented into a hard bed of ferruginous conglomerate. These layers of peroxide of iron are not infrequently to be met with. Of inferior importance are clays and shaly clays.

"The colour of the sandstones varies from white, or a light yellowish tint, in all stages up to a dark red and blue colour. The clays and sand clays have a bluish-grey tint. The minerals occasionally imbedded are gypsum, pyrite, coal. Nitrate of lime is found abundantly on the surface of the rocks."

From inspection of the native wells and from the borings of Messrs. Finlay, Fleming & Co., Dr. Noetling was able to divide the strata into four groups:—

(*a*) The upper group, consisting chiefly of brown and yellow sandstones followed by similar beds of soft sandstones of a dark red or yellowish white. The thickness of this group is from twenty to thirty feet, increasing to the east and west.

(*b*) The second group, consisting chiefly of bluish grey sandstones and clays alternating in innumerable beds. Concretions of hard nodules of sandstone in irregular layers are found, as well as occasionally small fragments and even small seams of coal, besides a small number of fossils, a mixture of terrestrial and marine animals of late tertiary age. The thickness of this group is not less than one hundred and seventy feet. The lower part contains a certain quantity of

oil, which oozes out at numerous places in the ravines. This is, however, not the proper oil-bearing formation.

(*c*) The third group consists of a stiff clunch of dark blue colour, with thin irregular beds of green sandstone imbedded in its lower portion. This "blue clunch," as Dr. Noetling calls it, occurs regularly at an average depth of two hundred feet when the well is on the top of the hill and of one hundred feet when in the ravine.

(*d*) The fourth group is the oil-bearing sandstone, which does not differ in character from the second (*b*) group. It consists of more or less soft, coarse or fine micaceous sandstone of a bluish grey colour, which is invariably changed to a more or less yellowish green, according to the amount of oil held suspended. There appear to be no natural reservoirs filled with oil. It is only to be found in soft *sandy* beds, more or less richly soaked with oil, from which it slowly exfiltrates into the well or bore sunk in these beds.

Dr. Noetling says :—

"I should think the total thickness of the useless strata is not exaggerated by estimating it at fifty feet ; the present known thickness of the oil-bearing sandstone would therefore be not less than one hundred and thirty to one hundred and thirty-five feet. But there is more than one reason to believe that the oil is not equally diffused throughout the sandstone, that is to say, that the different beds are equally soaked with oil. On the contrary there are several proofs that two beds of sandstone at different levels differ highly in the quantity of oil they contain, and it is not necessary that a certain lower bed should be richer charged with oil than an upper one."

Practical proof of this is given by two existing wells sunk at a few feet distance from one another. One of these yields fifty viss of oil in the day, and the other, which is not so deep, yields four hundred and fifty. The explanation seems to be that, though there are no reservoirs, there are pockets of sandstone more highly saturated than the bulk of the seam.

The origin of the oil is not capable of proof, but Dr. Noetling thinks, from the frequent occurrence of lumps of coal in the oil-bearing sandstone, that "by some chemical process, the nature of "which is unknown, whether we call it dry distillation or decompo-"sition, seams of coal formerly and partly still existing were "charged with oil."

Dr. Noetling continues:—

"The strata form an anticline, on the centre or top of which the oil-fields of Bemè and Twingôn are situated. The axis of the anticline agrees with the striking, that is to say, N. 40° E. The centre of the anticline is situated between the villages of Twingôn and Anauk-su, and owing to the special structure of the anticline the strata are here horizontal, or nearly horizontal, as may be seen in the ravine north of Kodaung. Leaving the centre the strata gradually begin to dip to either side. In the beginning the angle of dipping is only small; we notice angles of 5° to 8° in the ravine north of Kodaung, but dipping quickly increases. We already notice angles of 27° and 32° in the ravines bordering the oil-field; the angle increases later on only at a small rate up to 34° and 35°.

"It is the characteristic feature of the anticline that in its centre strata which are elsewhere far below are brought near the surface. At the same time we find in its centre the oldest strata, and removing from it in either direction are constantly meeting with younger strata, being exactly the same on both sides of the anticline. For instance we meet at the banks of the Pin creek again with the same soft sands abounding in numberless concretionary masses of sandy limestone as we noticed on the banks of the Irrawaddy.

"The special architecture of the country will now easily explain why just on that spot the oil industry has developed. The mechanical action which produced the anticline resulted in bringing those strata extremely near to the surface, which would else be far down below the surface at the spot where we notice them now. By the action of the surface water deep ravines were eaten in, which considerably reduced the distance from the surface to the oil-bearing strata, allowing the oil now to ooze out from the strata at many spots in the ravines, where cracks or fissures afford it an easy road.

"The same architecture of the country will also explain the quaint oblong shape of the oil district. The map shows that the oil district considered as a whole, as well as in single parts, forms an oblong with two very long and two very short sides. How is this shape, which is certainly not accidental, to be explained? The study of the architecture of the country will answer the question. I must mention beforehand that the Burmans are not able to dig wells of a greater depth than three hundred and ten feet. The oil-bearing strata at but a short distance from the centre of the anticline are far beyond the reach of Burmese art. Consequently the Burmans moved, one would almost say instinctively, on the top of the anti-cline, digging wells on each side as far as the dipping of the strata allowed them to do so.

"The axis of the Twingôn-Bemè oil district agrees therefore, or nearly agrees, with the axis of the anticline, and the strike and its longitudinal boundaries were dependent on the dipping of the strata.

"I fail to understand why the Burmans never tried to sink wells on the area between the Twingôn and Bemè oil-fields, and why they never tried to extend the oil-fields further north or south. I suppose it is a good deal due to the tradition which taught them that, if they dug a well within the boundaries of the before said oil-fields, they would get oil, while elsewhere no oil was to be got. Probably the failures of wells sunk at many places,

as for instance the old wells east of the Twingôn oil-field, confirmed their belief. So I was told that the Burmans foresaw an absolute failure of the bores at Kodaung and subsequently were highly astonished when they learnt that the bore yielded oil. On the other hand, there is certainly a good deal of superstition which prevents them from digging wells at certain places. When I pointed out a place south of the oil-fields of Bemè to a Burman, and asked him why people did not sink wells on that spot, he had any amount of subterfuges explaining why it was impossible to dig a well at this place, which he admitted to be a good one. Several men had already tried there to dig wells, but nobody had succeeded in doing so. But evidently he concealed the true reason of the dislike of digging a well at this place, and so I am inclined to believe that some superstition was the true reason preventing people from digging.

"A bore of three thousand feet sunk at a distance of half a mile from the centre (of the axis of the anticline) would drain eight hundred to nine hundred feet of the oil-bearing strata in a vertical direction. At a distance of one mile the difficulties would be considerably greater as regards the oil-bearing strata, which would not be reached under four thousand feet deep."

Burmese legends.

The Burmese have romantic legends to account for the origin, or discovery, of the oil-fields. Dr. Noetling was favoured with one tale by the headman of Bemè. Mr. Gibson, Extra Assistant Commissioner, furnishes an abridgment of a favourite *pwè* frequently played at Yenangyaung. They differ somewhat in their details, but have the same rather gruesome idea in common. The Bemè *Ywaôk* said that when King Alaungsithu was ten years of age he planned a visit to Mount Meru, the centre of the universe. As a means of getting there he ordered a magnificent *hpaung-daw*, a huge raft or barge, which took five years to build. When it was ready he set out on his journey and arrived at Minlin-taung, a hill about a mile to the south of the Bemè oil-fields. Here the barge was anchored and seven of the queens asked to be allowed to land for a stroll. The King said they were not to stay long away. On shore the queens came upon a fragrant liquid oozing from the rocks. In this they laved themselves and took so much pleasure in it that they forgot all about the necessity of soon returning on board. They were searched for, found, and put to death. Before they died they prayed that the seductive fragrant scent might change its nature. It was accordingly transformed into earth-oil. This form appears to be merely an inaccurate and very matter-of-fact summary of the *pwè* version, which runs as follows :—

In the reign of Pôppa Saw Rahan, the eleventh King of Pagan, in the second year of the Burmese era (A. D. 640), the *Myothugyi* of Kyaukka-myo (Yenangyaung) and his relatives dug a large reservoir about two miles east of the town for the benefit of the inhabitants. This was called the Myitta-kan, the meritorious tank.

Before it was finished an earthquake broke up all the ground in fissures and these were filled with a sweet-scented water (Yenathasi), which became very famous and attracted pilgrims from many parts, so that the *Myothugyi* and his family derived great profit. Then it was prophesied by a *Yahan*, a monk named Pônnawada Mabi, that in days to come at the command of a king the fragrant waters of Yenathasi would lose their perfume and would be changed into an oily liquid with an evil smell, and would thenceforth be known as Ye-nan. Nevertheless this change would in no way harm the interests of the descendants of the *Myothugyi*, but on the contrary would greatly benefit them. These descendants would be twenty-four in number, and the transformed scent would be of great value for preserving the sacred palm-leaf manuscripts and for illuminating pagodas and holy places.

Four centuries passed and then King Alaungsithu of Pagan heard that Kyaukka was a famous town and contained many wonderful things. He made up his mind to go to see it, and accordingly left Pagan on the fourth day of the waxing of the moon of the month of *Pyatho* 460 B. E. (January 1099 A.D). With him he took twenty-eight ladies of the Court, under charge of the eunuch Kye Pônna, one hundred chiefs and wise men, eighty-thousand troops, twelve touring boats, and a number of royal rafts. On the seventh waxing of the same month he arrived at Kyaukka-myo and immediately set about seeing the sights of the place. On the eighth day of the waxing, the day after his arrival, when he came back to the *Hpaung-daw*, he found that the eunuch Kye Pônna was missing and with him seven of the ladies of the palace, the Myozas of Nyaung-ôk, Nyaung-ywe, Salè, Talin, Kyabin, Pôppa, and Nyaung-yan. The King was very indignant and himself went in search of them. He reached the hill called Thuwunnagiri and spent the night there with a *zawgyi*, a fakir or magician, who lived in that place, and the hill has since then been called Minlintaung. Next morning King Alaungsithu found the bevy of ladies by the scented waters of the tank. He put them to death in his rage and they turned into *natseins*, green-faced spirits of the air. After a time the King's anger passed away and then he blamed the Yenathasi for prompting him to commit this crime. He therefore resolved that the water should be sweet-scented no more, and by aid of the miraculous powers which he possessed changed the perfume to the stench of the earth-oil. From that day forth the water has been known as Ye-nan.

On the tenth day of the waxing the King wished to leave Kyaukka-myo, but none of the rafts could be stirred from their moorings. He consulted with his wise men and learnt that the *natseins* wished to be provided for and would not permit him to go until he

had done so. Thereupon a meeting with the spirits was arranged and an amicable settlement was come to, according to which the King agreed that the proceeds of the sale of the Ye-nan were to be devoted to the eight *natseins*. King Alaungsithu also ordered that the oil-producing soil should be confined to a certain area which he defined and assigned to the descendants of the pious founder of the tank. The limits of the Ye-nan lands were marked by a straight line drawn from a place called Thelegaza, or Kyauksin, to Thuwunnagiri (Minlintaung); then from the centre of this line two points were to be marked off, one on the west at the same distance as from the centre to Minlintaung and one to the east. The boundary was to be from Kyauksin to the point on the east, thence to Minlintaung, thence to the point on the west, and thence to Kyauksin. After these commands had been issued it was found possible to move the royal barges and the King returned to Pagan on the day before the full moon.

There is a certain amount of business detail about the latter part of the *pwè* version, which suggests that it may have been composed by one of the hereditary well-digging families, with the view of keeping alive the particulars of their claims. Dr. Noetling remarks that it is "very remarkable that the magnetic bearing of the long "axes of the tract as demarcated by the King agrees with the "strike of the strata; in fact, it coincides with the centre line of the "anticline."

Early notices of the wells.

The earliest notice by any European of the Yenangyaung oil-fields appears to be that of Captain George Baker in his "Journal of an Embassy to the King of Burma in 1759." He says: "Raynangome I "take to lye 25′ south of Saleemue (Salè-myo) * * * * At "this place there are about two hundred families, who are chiefly "employed in getting earth-oil out of pits, some five miles in the "country."

In 1782 W. Hunter, a Surgeon in the employment of the East India Company, who visited Burma, wrote: "There is found here "swimming on the surface of the water in certain wells a kind of "petroleum or naphtha, which is used like oil for burning and also "for making unctuous composition for painting the sides of the "vessels."

The most full and trustworthy of the early accounts is, however, that of Symes in "An account of an Embassy to the Kingdom of Ava sent by the Governor-General of India in the year 1795." Captain Michael Symes says:

"The hills, or rather hillocks, were covered with gravel, and yielded no other vegetation than a few stunted bushes. The wheels (of the bullock-

carts) had worn ruts deep into the rock, which seems to be rather a mass of concreted gravel than hard stone, and many pieces of wood lay strewed about. It is remarkable that wherever these petrifications were found, the soil was unproductive and the ground destitute of verdure. The evening being far advanced, we met but few carts; those which we did observe were drawn each by a pair of oxen and of a length disproportionate to the breadth, to allow space for the earthen pots that contained the oil. It was a matter of surprise to us how they could convey such brittle ware, with any degree of safety, over so rugged a road; each pot was packed in a separate basket and laid on straw; notwithstanding which precaution the ground all the way was strewn with the fragments of the vessels and wet with oil, for no care can prevent the fracture of some in every journey. As we approached the pits, which were more distant than we had imagined, the country became less uneven and the soil produced herbage. It was nearly dark when we reached them, and the labourers had retired from work. There seemed to be a great many pits within a small compass. Walking to the nearest, we found the aperture about four feet square, and the sides as far as we could see down were lined with timber. The oil is drawn up in an iron pot fastened to a rope passed over a wooden cylinder, which revolves on an axis supported by two upright posts. When the pot is filled, two men take the rope by the end and run down a declivity, which is cut in the ground, to a distance equivalent to the depth of the well; thus, when they reach the end of their track, the pot is raised to its proper elevation, the contents, oil and water together, are then discharged into a cistern, and the water is afterwards discharged through a hole at the bottom. * * * * We ascertained the depths of the well to be thirty-seven fathoms, but the quantity of oil at the bottom we could not judge. * * * * We were told that when a pit yielded as much as came up to the waist of a man, it was deemed tolerably productive; if it reached to his neck it was abundant, but that which rose no higher than the knee was accounted indifferent. When a well is exhausted, they restore the spring by cutting deeper into the rock, which is extremely hard in those places where the oil is produced. Government farm out the ground that supplies this useful commodity and it is again let to adventurers who dig wells at their own hazard, by which they sometimes gain and often lose, as the labour and expense of digging are considerable. The oil is sold on the spot for a mere trifle. I think two or three hundred pots for a *tical* or half-a-crown. The principal charge is incurred by the transport and purchase of vessels."

Dr. Noetling comments on this—

"The features of the landscape must have been exactly the same a hundred years ago as they are now, so Symes's description of the country in those days corresponds very well with its present state. There are the same dry, barren country, the same dusty roads worn by deep wheel-tracks, strewn with pieces of broken earthen pots and saturated with spilt oil, and there are undoubtedly the same shrieking carts as there were a hundred years ago coming from the oil-fields while I am writing this report. But the most striking feature in Symes's account is the description of the wells, the method of extracting the oil, and the way of carting it down to the shore. In all this there has not been the slightest change; everything is

exactly as it was a hundred years ago, only that now clay earthen pots are used for hauling up the oil, and I dare say that the "iron" pot which Symes mentions was rather an exception."

Symes's statements about proprietary rights seem to be inexact, if the report of Captain Cox, who visited the oil-fields in 1797, are to be trusted. The account of his visit was published in the Asiatic Researches (Vol. VI. 1799) :—

"*An Account of the Petroleum Wells in the Burmese Dominions, extracted from the Journal of a Voyage from Ranghong up the river Eraiwaddy to Amarapoorah, the present capital of the Burma Empire, by Captain Hiram Cox, President at Ranghong.*

"*Saturday, 7th January 1797.*—" Wind easterly, sharp and cold, thick fog on the river until after sunrise, when it evaporated as usual, but soon after collected again, and continued so dense till 8-30 A.M. that we could barely see the length of the boat. Thermometer at sunrise 52°, at noon 74°, in the evening 69°. General course of the river north 20° west, main breadth from 1 to 1½ miles; current about 2½ miles per hour.

"East bank high, rugged, barren downs, with precipitous cliffs towards the river, of free stone intermixed with strata of quartz, martial ore, and red ochre; beach moderately shelving, covered with fragments of quartz, silex, petrifications, and red ochre, with rocky points projecting from it into the river.

"Western bank a range of low sandy islands, covered with a luxuriant growth of reed. These at present narrow the stream to three quarters and in some places to half a mile, but are overflowed in the rains; the main bank rather low and sandy, subject to be overflowed; its whole breadth about three miles, to the foot of a range of low woody hills, which in point of vegetation form an agreeable contrast to the eastern shores. These hills are bounded to the westward at the distance of about twenty miles from the river by an extensive range of high mountains, clothed with wood to their summits.

"At half past 10 A.M. came to the lower town of Rainanghong, a temple in it of the antique Hindu style of building. At noon came to the centre town of Rainanghong (literally the town through which flows a river of earth-oil) situated on the east bank of the river in latitude 20° 26′ north and longitude 94° 45′ 54″ east of Greenwich. Halted to examine the wells of petroleum.

"The town has but a mean appearance and several of its temples, of which there are great numbers, are falling to ruins. The inhabitants, however, are well dressed, many of them with gold spiral ear ornaments, and are undoubtedly rich from the great profit they derive from their oil-wells as will be seen below.

"At 2 P.M. I set off from my boat accompanied by the Mewthaghi or Zemindar of the district and several of the merchant proprietors to view the wells. Our road led to east-north-east through dry bars of loose sand in the watercourses and over rugged arid downs and hillocks of the same soil as described above, the growth on them consisting of scattered plants of *Eu-*

phorbeum, the cassia tree, which yields *terra japonica,* commonly called *cutch* or *cut*, and used throughout India as a component part of *abeera* or *paun*, also a very durable timber for lining the oil wells, and, lastly, the hardy bear or wild plum common in Hindustan.

"The sky was cloudless, so that the sun shone on us with undiminished force, and, being also unwell, I walked slowly, and as we were an hour walking to the wells, I therefore concluded they are about three miles distant from the river; those we saw are scattered irregularly about the down at no great distance from each other, perhaps not more than thirty or forty yards. At this particular place we were informed there are one hundred and eighty wells, four or five miles to the north-east three hundred and forty more.

"In making a well the hill is cut down so as to form a square table of fourteen or twenty feet for the crown of the well, and from this table a road is formed by scraping away an inclined plain for the drawers to descend in raising the excavated earth from the well and subsequently the oil. The shaft is sunk in a square form and lined, as the miner proceeds, with squares of *cassia* wood staves. These staves are about six feet long six inches broad and two thick; are rudely jointed and pinned at right-angles to each other, forming a square frame about four and a half feet in the clear for the uppermost ones, but more contracted below. When the miner has pierced six or more feet of the shaft, a series of these square frames are piled on each other, and regularly added to at top, the whole gradually sinking, as he deepens the shaft, and securing him against the falling in of the sides.

"The soil or strata to be pierced is nearly such as I have described the cliffs to be on the margin of the river, that is, first, a light sandy loam intermixed with fragments of quartz, silex, &c.: second, a friable sandstone, easily wrought, with their horizontal strata of concrete or martial ore, talc, and indurated argile (the latter has this singularity, it is denticulated, its lamina being perpendicular to the horizontal lamina of the argile on which it is seated) at from ten to fifteen feet from the surface and from each other, as there are several of these veins in the great body of free stone. Thirdly, at 70 cubits more or less from the surface, and immediately below the free stone, a pale blue argillaceous earth (schistous) impregnated with the petroleum and smelling strongly of it. This they say is very difficult to work and grows harder as they get deeper, ending in schist and slate, such as is found covering veins of coal in Europe, &c. Below the schist at the depth of about one hundred and thirty cubits is coal. I procured some, intermixed with sulphur and pyrites, which had been taken from a well deepened a few days before my arrival, but deemed amongst them a rarity, the oil in general flowing at a smaller depth. They were piercing a new well when I was there, and got to the depth of eighty cubits, and expected oil at ten or twenty cubits more.

"The machinery used in drawing up the rubbish and afterwards the oil from the well is an axle crossing the centre of the well, resting on two rude forked stanchions, with a revolving barrel on its centre, like the nave of a wheel, in which is a score for receiving the drawrope; the bucket is of wicker work, covered with dammer, and the labour of the drawers, in general three men, is facilitated by the descent of the inclined plane, as water is drawn from deep wells in the interior of Hindustan.

"To receive the oil one man is stationed at the brink of the well, who empties the bucket into a channel made on the surface of the earth leading to a sunk jar, from whence it is ladled into smaller ones and immediately carried down to the river either by coolies or on hackeries.

"When a well grows dry they deepen it. They say none are abandoned for barrenness. Even the death of a miner, from mephitic air, does not deter others from persisting in deepening them when dry. Two days before my arrival a man was suffocated in one of the wells, yet they afterwards renewed their attempts without further accident. I recommended their trying the air with a candle, but seemingly with little effect.

"The oil is drawn pure from the wells in the liquid state as used without variation, but in the cold season it congeals in the open air, and always loses something of its fluidity, the temperature of the wells preserving it in a liquid state fit to be drawn. A man who was lowered into a well of one hundred and ten cubits in my presence and immediately drawn up perspired copiously at every pore. Unfortunately I had no other means of trying the temperature. The oil is of a dingy green and odorous; it is used for lamps and boiled with a little dammer (a resin of the country) for painting the timbers of houses and bottoms of boats, &c., which it preserves from decay and vermin; its medicinal properties known to the natives is as a lotion in cutaneous eruptions and as an embrocation in bruises and rheumatic affections.

"The miners positively assured me no water ever percolates through the earth into the wells, as has been supposed. The rains in this part of the country are seldom heavy, and during the season a roof of thatch is thrown over the wells, the water that falls soon runs off to the river, and what penetrates into the earth is effectually prevented from descending to any great depth by the increasing hardness of the oleagenous argile and schist; this will readily be admitted, when it is known that coal mines at Whitley are worked below the harbour, and the roof of the galleries not more than fifty feet from the bed of the sea; the deficiency of rain in this tract may be owing to the high range of mountains to the westward which range parallel to the river and arrest the clouds in their passage as is the case on the eastern side of the peninsula of India.

"Solicitous to obtain accurate information on a subject so interesting as this natural source of wealth, I had all the principal proprietors assembled on board my boat and collected from them the following particulars. The foregoing I learned at the wells from the miners and others.

"I endeavoured to guard against exaggeration, as well as to obviate tho caution and reserve which mercantile men in all countries think it necessary to observe when minutely questioned on subjects affecting their interests, and I have to hope my information is not very distant from the truth.

"The property of these wells is in the owners of the soil, natives of the country, and descends to the heirs general as a kind of entailed hereditament, with which it is said Government never interferes, and which no distress will induce them to alienate. One family perhaps will possess four or five wells. I heard of none who had more. The generality have less. They are sunk by, and wrought for, the proprietors. The cost of sinking a

new well is two thousand *ticals* flowered silver of the country or two thousand five hundred *sicca* rupees and the annual average net profit one thousand *ticals* or one thousand two hundred and fifty *sicca* rupees.

"The contract price with the miner for sinking a well is as follows,—for the first forty cubits they have forty *ticals*, for the next forty cubits three hundred *ticals*, and beyond these eighty cubits to the oil they have from thirty to fifty *ticals* per cubit according to the depth (the Burma cubit is nineteen inches English). Taking the mean rate of forty *ticals* per cubit and a hundred cubits as the general depth at which they come to oil, the remaining twenty cubits will cost eight hundred *ticals*, or the whole of the miner's wages for sinking the shaft, one thousand one hundred and forty *ticals*; a well of one hundred cubits will require nine hundred and fifty *cassia* staves, which at five *ticals* per hundred will cost forty-two and a half *ticals*.

Portage and workmanship in fitting them may amount to a hundred *ticals* more, the levelling the hill for the crown of the well and making the draw road, &c., according to the common rate of labour in the country, will cost about two hundred *ticals*. Ropes, &c. and provisions for the workmen, which are supplied by the proprietor when making a new well, expenses of propitiatory sacrifices, and perhaps a seigniorage fine to Government for permission to sink a new well consume the remaining five hundred and twelve and a half *ticals*. In deepening an old well they make the best bargain in their power with the miners, who rate their demand per cubit according to its depth and danger from the heats or mephitic air.

"The amount produced and wages of the labourers who draw the oil, as stated to me, I suspect was exaggerated or erroneous from misinterpretation on both sides.

"The average produce of each well per diem, they said, was five hundred viss, or one thousand eight hundred and twenty-five lbs. avoirdupois, and that the labourers earned upwards of eight *ticals* each per month; but I apprehend this was not meant as the average produce, or wages per every day or month throughout the year, as must appear from further examination on the subject; where facts are dubious we must endeavour to obtain truth from internal evidence. Each well is worked by four men, and their wage is regulated by the average produce of six days' labour, of which they have one-sixth, or its value at the rate of one and a quarter *ticals* per hundred viss, the price of the oil at the wells; the proprietor has an option of paying their sixth in oil, but I understand he pays the value in money, and, if so, I think it is as fair a mode of regulating the wages of labour as anywhere practised, for in proportion as the labourer works he benefits, and gains only as he benefits his employer. He can only do injury by overworking himself, which is not likely to happen to an Indian; no provisions are allowed the oil-drawers, but the proprietor supplies the ropes, &c., and lastly the king's duty is one-tenth of the produce.

"Now supposing a well to yield five hundred viss per diem throughout the year, deducting one-sixth for the labourers and one-tenth for the king, there will remain for the proprietor, rejecting fractions, one hundred and thirty-six thousand eight hundred and seventy-six viss, which at one and a quarter *ticals*, the value at the wells, is equal to one thousand seven hundred and ten *ticals* per annum. From this sum there is to be deducted only a trifle for draw ropes, &c., for I could not learn that there was any further duties

or expense to be charged on the produce, but the merchants say they gain only a net of one thousand *ticals* per annum for each well, and as we advance we shall have reason to think they have given the maximum rather than the minimum of their profits; hence, therefore, we may infer that the gross amount produced per annum is not one hundred and eighty-two thousand five hundred viss.

"Further the four labourers' shares, or one-sixth, deducting the King's tithe, will be two thousand two hundred and fifty viss per month of thirty days, or in money at the above price twenty-eight *ticals* fifty *avas*, or seven *ticals* twelve *avas* each per man per month, but the wage of a common labourer in this part of the country, as the same persons informed me, is only five *ticals* per month when hired from day to day. They also admitted that the labour of the oil-drawers was not harder than that of common labourers, and the employment was in no way obnoxious to health. To me the smell of the oil was fragrant and grateful, and on being more indirectly questioned (for on this part of the subject, perhaps owing to the minuteness of my enquiries, I observed most reserve), they allowed that their gain was not much greater than the common labourers of the country, nor is it reasonable to expect it should, for as there is no mystery in drawing off oil, no particular hardships endured, or risk of health, no compulsion or prevention pretended, and as it is the interest of the proprietors to get their work done at the cheapest rate, of course the numbers that would flock to so regular and profitable an employment would soon lower the rate of hire nearly at least to the common wages of the country; besides I observed no appearance of affluence amongst the labourers; they were meanly lodged and clad, and fed coarsely not on rice, which in the upper provinces is an article of luxury, but on dry grains and indigenous roots of the native cassia, collected in the wastes by their women and children; further it is not reasonable to suppose that the labourers worked constantly; nature always requires a respite and will be obeyed, however much the desire of gain may stimulate, and this cause must more particularly operate in warm climates to produce what we often call indolence. Even the rigid Cato emphatically says that the man who has not time to be idle is a slave. A due consideration of this physical and moral necessity ought perhaps to vindicate religious legislators from the reproaches too liberally bestowed on them for sanctioning relaxation; be that as it may, I think it is sufficiently apparent that the article of wages is also exaggerated and that five hundred viss must only be considered as the amount of produce of working days, and not an average for every day in the year. The labour of the miners, as I have observed above, is altogether distinct from the oil-drawers, and their pay proportioned to the hardships and risks they endure. Assuming therefore as data the acknowledged profit of one thousand *ticals* per annum for each well, which we can hardly suppose exaggerated, as it would expose the proprietors to an additional tax, and the common wages of precarious employment in the country, that is, one month with another, including holidays the year round, four and a half *ticals* per month as the pay of the oil-drawers, which includes the two extremes of the question, it will make the average produce of each well per diem three hundred viss, one hundred and nine thousand five hundred viss per annum, equal to three hundred and ninety-nine thousand six hundred and seventy-five pounds avoirdupois or one hundred and seven-

ty-eight thousand nine hundred and fifty-five tons, or in liquid measure seven hundred and ninety-three hogsheads of sixty-three gallons each, and as there are five hundred and twenty wells registered by Government, the gross amount of produce of the whole per annum will be fifty-six millions nine hundred and forty thousand viss or ninety-two thousand seven hundred and eighty-one tons, one thousand five hundred and sixty pounds, or four hundred and twelve thousand three hundred and sixty hogsheads, worth at the wells one and a quarter *ticals* per one hundred viss, seven hundred and eleven thousand seven hundred and fifty *ticals*, or eight hundred and eighty-nine thousand seven hundred and thirty-seven *sicca* rupees.

"From the wells the oil is carried in small jars by coolies or on carts to the river, where it is delivered to the merchant exporter at two *ticals* per one hundred viss, the value being enhanced three-eighths by the expense and risk of portage; therefore the gross value or profit to the country of the whole, deducting five per cent. for wastage, may be stated at one million eighty-one thousand eight hundred and sixty *ticals* or one million three hundred and sixty-two thousand three hundred and twenty-five *sicca* rupees per annum, yielding a direct revenue to the king of one hundred and thirty-six thousand two hundred and thirty-two *sicca* rupees per annum and perhaps thrice as much more before it reaches the consumer, besides the benefit the whole country must derive from the productive industry called into action by the constant employment of so large a capital on so gross an article. There were between seventy and eighty boats, average burthen sixty tons each, loading oil at several wharves, and others coming and going while I was there. A number of boats and men also find constant employment in providing the pots, &c., for the oil, and the extent of this single branch of internal commerce (for almost the whole is consumed in the country) will serve to give some insight into the internal commerce and resources of the country.

"At the wells the price of the oil is seven annas six pies per one hundred and twelve pounds avoirdupois; at the port of Ranghong it is sold at the average rate of three *sicca* rupees three annas six pies per hundredweight or per hogshead of sixty-three gallons weighing five hundred and four pounds, fourteen rupees seven annas nine pies exclusive of the cask, or per Bengal Bazaar maund two rupees five annas eight pies, whereas the mustard seed and other vegetable oils sell at Ranghong at eleven rupees per bazaar maund.

"To conclude, the oil is a genuine petroleum, possessing all the properties of coal tar, being in fact the self-same thing, the only difference is that nature elaborates in the bowels of the earth that for the Burmans for which European nations are obliged to the ingenuity of Lord Dundonald."

Captain Cox's spelling Rainanghong for Yenangyaung confirms the tradition that the first oil-diggers were Arakanese slaves. The oil-field he visited must have been that of Bemè. The number of wells, however, appears to be greatly exaggerated.

The next visitor was Crawfurd, who visited the oil-fields in 1826. He describes them as follows in his Mission to Ava:—

"At three in the afternoon our whole party proceeded to the celebrated petroleum wells. Those which we visited cannot be farther than three miles

from the village, for we walked to them in forty minutes. The cart-road which leads to them is tolerably good, at least for a foot traveller. The wells occupy altogether a space of about sixteen square miles. The country here is a series of sand-hills and ravines, the latter torrents after a shower of rain, as we now experienced, and the former either covered with a very thin soil or altogether bare. The trees, which were rather more numerous than we looked for, did not rise beyond twenty feet in height. The surface gave no indication that we could detect of the existence of the petroleum. On the spot which we reached, there were eight or ten wells, and we examined one of the best. The shaft was of a square form and its dimensions about four feet to a side. It was formed by sinking a frame of wood composed of beams of the *Mimosa catechu*, which affords a durable timber. Our conductor, the son of the *Myothugyi* of the village, informed us that the wells were commonly from one hundred and forty to one hundred and sixty cubits deep and that their greatest depth in any case was two hundred. He informed us that the one we were examining was the private property of his father, that it was considered very productive, and that its exact depth was one hundred and forty cubits. We measured it with a good lead-line and ascertained its depth to be two hundred and ten feet, thus corresponding exactly with the report of our conductor, a matter which we did not look for, considering the extraordinary carelessness of the Burmans in all matters of this description. A pot of the oil was taken up and a good thermometer being immediately plunged in it, indicated a temperature of ninety degrees. That of the air, when we left the ship an hour before, was eighty-two degrees. To make the experiment perfectly accurate we ought to have brought a second thermometer along with us, but this was neglected. We looked into one or two of the wells and could discern the bottom. The liquid seemed as if boiling; but whether from the emission of gaseous fluids, or simply from the escape of the oil itself from the ground, we had no means of determining.

"The formation where the wells are sunk consisted of sand, loose sandstone, and blue clay. When a well is dug to a considerable extent, the labourers informed us that brown coal was occasionally found. Unfortunately we could obtain no specimens of this mineral on the spot, but I afterwards obtained some good ones in the village. The petroleum itself, when first taken out of the well, is of a thin watery consistence, but thickens by keeping, and in the cold weather it coagulates. Its colour, at all times, is a dirty green, not much unlike that of stagnant water. It has a pungent, aromatic odour, offensive to most people. The wells are worked by the simplest contrivance imaginable; there is over each well a cross-beam, supported by two rude stanchions. At the centre of the cross-beams and embracing it is a hollow revolving cylinder, with a channel to receive a drag rope, to which is appended a common earthen pot, that is let down into the well and brought up full by the assistance of two persons pulling the rope down an inclined plane by the side of the well. The contents of the pot are deposited for the time in a cistern. Two persons are employed in raising the oil, making the whole number of persons engaged on each well only four. The oil is carried to the village, or put in carts drawn by a pair of bullocks, each cart conveying from ten to fourteen pots of ten viss each, or from two hundred and sixty-five to three hundred and seventy-one pounds avoirdupois of the commodity. The proprietors store the oil in their

houses at the village, and then vend it to the exporters. The price according to the demand varies from four *ticals* of flowered silver to six *ticals* per thousand viss, which is from five to seven pence half-penny per hundredweight. The carriage of so bulky a commodity, and the breakage to which the pots are so liable, enhance the price in the most distant parts to which the article is transported to fifty *ticals* per thousand viss * * *

"Petroleum is used by the Burmans for the purpose of burning in lamps and smearing timber to protect it against insects. The quantity exported to foreign parts is a mere trifle, not worth noticing. It is considered that a consumption of thirty viss per annum for each family of five and a half persons is a moderate average. * * *

"I made such enquiry into the nature of the trade as my short stay would admit. The number of boats waiting for cargoes of oil was correctly taken and found to amount to one hundred and eighty-three of very various sizes, some carrying only one thousand viss, and others fourteen thousand. According to the Burmese whom I consulted, the average burthen of the vessels employed in this traffic was considered to be about four thousand viss. The number now mentioned is not considered unusual, and it has been reckoned that, one with another, they complete their cargoes in fifteen days. They are therefore renewed twenty-four times in the course of the year, and the exportation of oil according to this estimate will be seventeen millions five hundred and sixty-eight thousand viss.

"Of the actual produce of the wells we received accounts not easily reconcileable to each other* * * The produce of the wells was stated, according to goodness, to vary from thirty to five hundred, the average giving about two-hundred and thirty-five viss; and the number of wells was sometimes given as low as fifty and sometimes as high as four hundred. The average made about two hundred and, considering that they spread over sixteen square miles, as well as that the oil is well known to be a very general article of consumption throughout the country, I do not think this number exaggerated.

"The celebrated petroleum wells afford, as I ascertained at Ava, a revenue to the king or his officers. The wells are private property and belong hereditarily to about thirty-two individuals. A duty of five parts in one hundred is levied upon the petroleum as it comes from the wells and the amount realized upon it is said to be twenty-five thousand *ticals* per annum. No less than twenty thousand of this goes to contractors, collectors, or public officers, and the share of the State, five thousand, was assigned during our visit as a pension of one of the queens * * *

"From the more accurate information which I obtained at Ava it appears that the produce of these may be estimated at the highest in round numbers at about twenty-two millions of viss each of 3·65 pounds avoirdupois. The estimate is formed from the report of the *Myothugyi*, who rents the tax on the wells, which is five in a hundred. His annual collection is twenty-five thousand *ticals*, and he estimated or conjectured that the loss by smuggling was about eight thousand, making the total thirty-three thousand. The value of the whole produce therefore is six hundred and sixty thousand *ticals*. The value of the oil on the spot is reckoned at three *ticals* per hundred viss, and consequently its amount will be as above stated."

Colonel Yule visited the wells in 1855 when on the Mission to Ava. He describes the plateau as—

"An irregular table with a gently rising surface, forming a sort of peninsula among the ravines.

"The wells are frequent along its upper surface, and on the sides and spurs of the ravines which bound it on the north and south-east. They are said to be about a hundred in number, but of these some are exhausted or not worked.

"As far as we could judge, the area within which these wells stand does not exceed half a square mile. The wells are in some places pretty close together, less, that is to say, than a hundred feet apart. They are all exactly alike in appearance, rectangular orifices about four and a half by three and half feet and lined with horizontal timbers the whole way down. The oil appears to be found in a stratum of impure lignite, with a good deal of sulphur. In one of the valleys we saw a stratum of this out-cropping with the oil oozing between the laminæ. Doubtless it was in this way originally discovered, some Burman, with large inductive faculty, having been led to sink a shaft from above.

"The petroleum from these pits is very generally used as a lamp-oil all over Burma. It is also used largely on the wood-work and planking of the houses as a preservative from insects, and for several minor purposes, as a liniment, and even as a medicine taken internally. The Chinese geography, translated in Thevenot's *Voyages Curieux*, says that it is a sovereign remedy for the itch, which its sulphurous affinities render highly probable. There is now a considerable export of the article from Rangoon to England, and one of the Rangoon houses has a European agent residing on the spot. The demand in England is, I believe, for use to some extent as a lubricating oil, but it is also employed by Price's Company at Lambeth in the manufacture of patent candles, and has been found to yield several valuable products. It has sold in the London market at from £40 to £45 a ton.

"The oil itself looks like thin treacle of a greenish colour, and the smell is not unpleasant in the open air, and in moderate strength.

"The northern group of wells contains, as well as could be learned, about eighty wells now yielding oil. The southern group contains about forty, which yield an inferior kind of oil mixed with water. At either place there are many exhausted wells. Each group occupies a space of about half a square mile or somewhat less. There appears to be no record or tradition as to the original discovery of the petroleum or as to the lapse of time since it was first worked. The wells are private property, the ground they occupy being owned by twenty-three families, inhabitants of Yenangyaung, and the representatives, it is believed, of those who first discovered and worked the petroleum. Among these is the hereditary *myothugyi* of the place, who holds at present the office of *Myit-tsenwun*, or Chief Magistrate of the great river. They do not allow any stranger to dig a well, and, although a respectable owner stated that that they had no written grant or confirmation of their exclusive privilege, yet it is upheld by the local Burmese authorities, and apparently they have sufficient influence to prevent any wells being dug by interlopers in the vicinity of their groups or clusters of wells. But independently of the influence they thus exert to prevent any inter-

ference with their privileges and profits, the expense, in the present dearth of capital and the uncertainty of return, prevents any one trying seriously to compete with them. The twenty-three proprietors constitute a kind of corporate body as regards their joint interests in the land, but possess individual property in their own well. When once a well has been dug, no one else is allowed to dig within thirty cubits of it. No proprietor is allowed to sell or mortgage his well to any one not a proprietor. They mortgage them among themselves. Formerly they intermarried among themselves only; but latterly an old and respectable proprietor informed Major Phayre this custom had been broken through by the young people.

"The cost of digging a well a hundred and fifty cubits deep was said to be fifteen hundred to two thousand *ticals*, sometimes even more, and after all the money might be thrown away, as a well dug within a few yards of others yielding a good supply often proves a failure. The work of excavation becomes dangerous as the oily stratum is approached, and frequently the diggers become senseless from exhalations. This also happens occasionally in wells that have been long worked. If a man is brought up to the surface with his tongue hanging out, said one of our informants, it is a hopeless case. If his tongue is not hanging out, he can be brought round by hand-rubbing and kneading his body all over.

"As to the amount of revenue derived by the king from the petroleum we found it difficult to get definite information. One intelligent proprietor, who was a Myoôk of the town, stated that out of twenty-seven thousand viss which formed the whole monthly yield of his well, nine thousand went in payment to the work people, one thousand to the king, and one thousand to the lord of the district.

Colonel Strover in 1873, in a memorandum, published in the *Gazette of India,* says:—

"There are at present about one hundred and fifty wells worked at Yenangyaung. The quantity of oil estimated as deliverable from these wells is fifteen thousand viss daily, of which ten thousand viss is taken by the contractor who supplies British Burma, and five thousand viss by the contractor who supplies Upper Burma. The yield of the wells is estimated yearly by officials sent down to Yenangyaung by His Majesty, and the Royal revenue is calculated at seven rupees eight annas per hundred viss and realizes four lakhs of rupees per annum. The total yield of these wells is six millions viss per annum or nine thousand three hundred and seventy-five tons.

"At Pagan there are about fifty wells. They yield daily fifteen hundred viss of oil, which the earth-oil contractor, at present the Le-myo *Wun* and one Maung San Wa, are allowed to purchase. The total estimated output per annum is six millions six hundred thousand viss or ten thousand three hundred and twelve and a half tons.

The Pagan or Yenangyat oil-wells would therefore appear to have been discovered and worked for the first time between 1855 and 1873, for there is no previous mention of them.

The following is the substance of a memorandum drawn up for Sir Charles Bernard by a member of the *Hlut-daw* in July 1886.

It gives an account of the management of the oil-fields in the years just before the annexation.

"It was customary to make over the oil obtained from the royal wells as well as from those of the *twinzas* to the farmer of the year, who paid a certain amount of royalty to the Government. The amount of such royalty was determined by an estimate prepared beforehand. Thus from the year 1241 to 1243 (1879 to 1881) the following estimate was made:—

	Viss.
Monthly yield	400,000

"This was distributed in the following way":—

	Viss.	Value in Rs.
(*a*) For Royal purposes	10,000	2,500
(*b*) Brought up the river at Rs. 25 per 100 viss	120,000	30,000
(*c*) Taken down the river at Rs. 15 per 100 viss	270,000	40,500

"The total of proceeds was therefore estimated at 70,000 rupees per month.

"The actual expenditure was"—

	Rs.
(*a*) Paid to *twinzas* for the oil at Rs. 1-8-0 per 100 viss ...	6,000
(*b*) On account of boat hire Rs. 2-8-0 per 100 viss ...	10,000
Total ...	16,000
Total of proceeds ...	70,000
Total expenditure ...	16,000
Balance ...	54,000

"Thus the farmer paid a monthly royalty of Rs. 50,000 during these years. Since 1243 (1881) the demand for earth-oil was diminished and the whole of the yield could not be bought up.

"The estimate was—

	Viss.
(*a*) For Royal purposes	10,000
(*b*) Brought up the river	90,000
(*c*) Brought down the river	160,000
Total ...	260,000

"Proceeds of sale Rs. 34,700, made up of Rs. 23,400, value of the oil brought up, and sold at Rs. 26 per 100 viss, *plus* Rs. 11,200, the value of the oil taken down and sold at Rs. 7 per 100 viss:—

Expenditure—

	Rs.
(*a*) Paid for the oil Rs. 1-8-0 per 100 viss	3,900
(*b*) Boat-hire at Rs. 2 per 100 viss	5,200
Total ...	9,100
Total of proceeds ...	34,700
Total of expenditure ...	9,100
Balance ...	25,600

"Thus the farmer paid to the Government Rs. 25,000 as a monthly royalty. Subsequently, in May 1885, the royalty was reduced to Rs. 20,000.

"The *twinzas* were exempted from the *thathameda,* or capitation-tax, on account of their services rendered to the Government."

The following table was appended to the letter: —

	YENANGYAUNG.				PAGAN-YENANGYAT.				TOTAL.			
	Number of wells	Unproductive wells.	Productive wells.	Approximate monthly yield in viss.	Number of wells.	Unproductive wells.	Productive wells.	Approximate monthly yield in viss.	Number of wells.	Unproductive wells.	Productive wells.	Approximate monthly yield in viss.
Royal wells ...	138	72	66	26,000	38	23	15	8,000	176	95	81	34,000
Wells belonging to *twinzas.*	198	...	198	360,000	Not stated			2,000	198	...	198	362,000
Total ...	336	72	264	386,000	38	23	15	10,000	374	95	279	396,000

Dr. Fritz Noetling in 1889 ascertained that the Twingôn oil-field covered an area of about ninety acres, extending over fifty chains in length and between fifteen and twenty chains in breadth. It had three hundred and seventy-five wells, of which one hundred and sixty-six were totally unproductive, and of the two hundred and nine productive wells only one hundred and twenty produced more than twenty viss a day. The maximum from any single well was five hundred viss in the day and the majority produced between twenty and a hundred viss, and the total daily production ranged from twelve thousand viss to fifteen and sixteen thousand viss. No well exceeded three hundred and ten feet in depth.

The Bemè oil-field covered only thirty-five acres, with a length of twenty-seven chains and a breadth of twenty. It had one hundred and fifty-one wells, of which seventy-nine were totally unproductive and, of the seventy-two productive wells, only fifty produced more than twenty viss in the day, while no well produced more than one hundred and sixty-five viss in the day. The total daily production amounted to three thousand six hundred and fifty-eight viss and the daily average of a productive well was 68·7 viss. The deepest well was not more than two hundred and seventy feet.

Dr. Noetling considered that the Twingôn oil-field was then at the zenith of its production, while the Bemè wells had extracted

nearly all the oil from the sandstone, but the native style of working left by far the greater part of the oil-bearing strata untouched. If anything, the Bemè field has been the longer worked, but it appears that both fields have been worked for over one hundred years.

The Yenangyat oil-field does not appear to have been worked till shortly after the middle of this century. It is first mentioned by Colonel Strover in 1873, and has never attained to the importance of the Yenangyaung fields. Yenangyat lies about eight miles from Pagan on the opposite, the right, bank of the Irrawaddy. The wells are situated in three narrow ravines cutting due east through the hill range which here borders the river. The first valley to the north of the village of Yenangyat is called Yenangyat *chaung* and the productive wells are found in it. The two other valleys to the north of the village of Yenangyat, the Ôk *chaung*, and the Ywaya *chaung*, now only contain deserted wells. The three valleys are separated by high spurs running eastwards from the main range and ending abruptly on the river.

The sinking of the wells is carried on by the Burmese at the present day exactly in the same way as Captain Cox described it a hundred years ago. The tool used for digging is called a *ta-ywin*, which consists of a chisel-shaped iron shoe fixed to a club-shaped wooden handle. The iron shoe is round, slightly tapered, and ends in a grooved double edge. The miner grasps the *ta-ywin* about the middle, rests the upper notched end of the handle against his shoulder and drives the point in with the whole weight of his body. The hard strata are broken through by dropping a pointed lump of iron, forty viss in weight, from the mouth of the shaft.

The miners are lowered by a rope which ends in two slings through which they pass their legs. No light can be taken down the shaft on account of the explosive gases. The fumes moreover render breathing difficult ; so that few can stay below for more than four minutes. In order therefore to make the most of this time the miners tie up their eyes while they are at the pit head. In this way their eyes are in focus immediately when they reach the bottom of the shaft. This is the more necessary since the total of the time spent at work below amounts, according to Dr. Noetling's calculations, to no more than from ten to eighteen per cent. of the time occupied in lowering and raising him. No accidents from choking appear to have occurred, though the diggers very often come up much exhausted and streaming with perspiration. Before going down they put a hat of palm leaves on the head to protect it from stones or the like falling down from the sides of the shaft.

According to Dr. Noetling's calculations the cost of digging a well one hundred and ninety feet deep amounted under the Burmese system to six hundred rupees, while a well two hundred and fifty feet deep would cost just double that sum.

From observations extending over four and a half years Dr. Noetling ascertained that the outturn of oil fluctuates regularly throughout the year. "The minimum of production will be noticed "during the first quarter of the year, and it may be either February "or March, but most likely February, in which the smallest produc-"tions will be registered. From March to May we notice a gentle "rise, and during the four months May to August there is a maxi-"mum, which is highest in August, is followed by a sudden drop in "September, followed again by a slow rise in October and Novem-"ber, but a general fall during the last four months of the year." From this it appears that the minimum of production is in the dry season and the maximum in the rains. Dr. Noetling says: "there "has only been once a minimum of production during the rainy "season, but there has never been a maximum of production during "the dry season." He even goes further than this and thinks that he has detected a coincidence between the level of the Irrawaddy river and the quantity of production. In the months when the river is at its lowest the production of oil is at its lowest, and when the river rises the production rises and reaches its maximum with the greatest height of the river floods; not only is this so, but intermediate rises and falls seem to be reflected in the output of the wells. The mud wells near the Irrawaddy appear to be indisputably controlled in their activity by the river-level. Whatever may be the reason for it the fact seems substantiated. Dr. Noetling notices that the drilled wells show exactly the same fluctuations as the pit wells.

A consideration of the production of the pit-wells shows that those of the Twingôn area are slightly increasing; those of Bemè decreasing; while the Yenangyat oil-field shows very little except that the strata are much less rich in oil than those of Yenangyaung.

Although boring for oil was started in 1887, it was not till 1889 that much in the way of results was attained. The system of drilling adopted was chiefly the American or cable system, rather than the European or rod system, but in either case the procuring of the requisite plant took up much time. So far the majority of drilled wells drain the oil from a stratum which is only sixty feet, and in many cases less than this, below the level reached by the deepest pit-wells. Nevertheless they draw the oil from strata untouched by

the pit-wells. As the depth of the pit-wells is limited by difficulties of construction, so the depth of the drilled wells is limited by the expense. The strata are very apt to cave, and therefore casing is required, the cost of which necessarily increases with the depth. It has not been proved that the yield of a well increases proportionately with its depth. The deeper wells appear to yield exactly as much oil as the shallower, so that it is better to have shallow wells requiring a shorter length of casing. Dr. Noetling's tables show that the total daily average per well amounts to 1,098·68 viss or thirteen barrels. According to this the average yield of a well in Burma is equal to any well in Canada, but considerably below the wells of America or Baku, where an outturn of eighty-six barrels a day is not considered rich. There appears to be no probability of striking spouting wells.

Dr. Noetling's exhaustive consideration of the production of the oil-fields since they have been known, that is to say for the last hundred years, leads him to the conclusion that the output steadily increased up to about 1873, then steadily declined up till 1885, when a new rise began which continued till April 1891, since which the same level has been maintained. The production of the first five years after the annexation is given in the following table :—

Year.	Production of native wells.			Production of drilled wells.			Total.		
	Viss at 3·65 lbs.	Gallons at 8·83 lbs.	Barrels at 35 gallons.	Viss at 3·65 lbs.	Gallons at lbs. 8·83.	Barrels at 35 gallons.	Viss at 3·65 lbs.	Gallons at 8·83 lbs.	Barrels at 35 gallons.
1886 ...	3,418,090	1,412,433	40,355	...	...	...	3,418,090	1,412,433	40,355
1887 ...	5,651,200	2,335,205	66,720	...	...	...	5,651,200	2,335,205	66,720
1888 ...	6,125,430	2,531,169	72,319	41,590	17,186	491	6,167,020	2,548,355	72,810
1889 ...	6,408,650	2,648,202	75,662	427,130	176,500	5,042	6,835,780	2,824,702	80,705
1890 ...	6,761,430	2,793,980	79,828	3,671,080	1,516,975	43,342	10,432,510	4,310,955	123,170
Total ...	28,364,500	11,720,991	334,884	4,139,800	1,710,661	48,875	32,404,600	12,931,652	383,759

He computes that the total production of the oil-fields since 1795 has amounted to two hundred millions of gallons. This is about one-third of the quantity annually produced in Russia and one-quarter of that which America produces every year.

The following later information is taken from a lecture delivered in 1898 at the Imperial Institute by Mr. Boverton Redwood:—

"In 1891 there were three hundred and seventy-three productive dug wells in the Yenangyaung district, and the average daily yield per well was one hundred and seventy-four lbs. In view of this small yield, and of the impossibility of excluding water from these dug wells, it was not surprising that the introduction by the Burma Oil Company of the modern system of drilling should have placed the petroleum industry of Burma upon a greatly improved footing. In the Kodaung field in the Yenangyaung district, close upon one hundred wells had been drilled by that company. In the early stages of working in this field, oil was found at a depth of about five hundred feet, and the yield was generally from five to twenty barrels per well per diem, but occasionally a well yielded for a short time as much as fifty barrels a day and in one or two exceptional instances even more. The production of such wells, however, invariably declined rapidly to about ten or twelve barrels a day. The well then gradually became non-yielding, and had to be deepened to eight hundred to twelve hundred feet. For some time past all bores had to be continued to about one thousand to twelve hundred feet, at great expense, on account of the incessant and abnormal caving, continuous influx of water, and frequent occurrence of boulders and shells. As an illustration of this, one well at Kodaung had been recently abandoned at twelve hundred feet after thirteen months' continuous work, the tools and casing having to be left in it. Two wells had recently been completed in that district which flowed for a short time, but with these exceptions the wells drilled here had not flowed.

"At Yenankyat, eight miles south of Pagan, and on the opposite side of the Irrawaddy to Yenangyaung, there was another oil-field, where the Burma Oil Company had already drilled about twenty-five wells to a depth of one thousand to twelve hundred feet. Each of these wells yielded on the average from fifteen to twenty barrels of oil a day, and some of them flowed at first, but the gas pressure soon diminished to such an extent that the oil had to be raised by pumps. At Minbu, about eighteen miles below Yenangyaung on the western side of the river, there were promising indications in the neighbourhood of some remarkable mud volcanoes. The Burma Oil Company had had a number of drillers at work here for the past two years, and had abandoned a couple of wells drilled to a depth of over one thousand feet, as only gas and mere shows of oil were met with. The company conveyed their oil in bulk by river to their refineries at Dunnedaw and Syriam near Rangoon. The former refinery was built shortly after the annexation and has recently been enlarged to a capacity of eight lakhs to one million gallons of crude oil per month. The latter, which was erected for refining the Yenankyat crude oil, had a capacity of five lakhs to six lakhs of gallons per month."

Information as to the petroleum trade in the days before the British annexation is very scanty. Apparently up to the time of the

occupation of Pegu (1853) all that was produced was consumed locally for illuminating purposes and for preserving the timber of boats, *pôngyi kyaungs*, and the like. Small quantities may have been brought over to India, and it is quite certain that a considerable quantity found its way through the Shan States into Western China. Dr. Noetling thinks that the local consumption probably amounted to three lakhs of viss. There was a considerable increase in the amount after the occupation of Lower Burma, owing to the export of crude petroleum to England, but this remained at practically the same figure until 1884. During the year 1884-85 a considerable rise took place and has continued ever since, so that the amount sent from the wells to Lower Burma in 1890-91 was more than double that of 1884-85.

The amount of petroleum exported from Rangoon has steadily increased, and has risen from five lakhs of viss in 1880-81 to twenty-two and a quarter lakhs of viss in 1889-90, an increase of over four hundred per cent. within nine years. The increase in the export of paraffin wax has been infinitely greater. In 1884-85 only three hundred and twenty-one hundred-weights were exported. In 1889-90 the amount had risen to seven thousand nine hundred and twenty hundred-weights, that is to say, there was the huge increase of about two thousand per cent. in five years' time.

It is one of the peculiar features of the Yenangyaung oil-field that it was worked by a corporation from the earliest times. It cannot be ascertained how this corporation first acquired its rights, whether by special grant, or by right of first settlement and discovery. Apparently, however, the *twin-sa-yo* are of Arakanese descent, and therefore they were probably prisoners of war and perhaps pagoda-slaves. This last supposition would account for the fact that up till 1855 the *twin-sa-yo* always intermarried and made no alliances with their Burmese neighbours, and it is certain from Captain Cox's narrative that they were there previous to 1797. From the enquiries and reports of Messrs. Bonus and Todd-Naylor it appears that the principal customs and rules of the *twin-sa-yo* were as follows :—

The joint right to dig for oil in a vaguely determined area near the villages of Bemè and Twingôn was restricted to twenty-four families. These families were called the *yoya*, or hereditary families, and every member of them was entitled to dig for oil. Formerly no outsider could become a well-owner. The wells could only be owned by one of the *yoya* families. The head of such a family was called *twin-sa-yo*, and women were not excluded. There were eighteen male *yoyas*, and six female. The title and rights of the *yoya* descended strictly according to primogeniture. The male

yoya rights vested in the males and the female strictly in the female line. The *yoya* right could never be sold to a stranger, but, if a *twin-sa-yo* had no direct issue, he could, with the consent of the other *twin-sa-yo*, sell the title to a remote member of his family. At the time of the annexation there were four *yoya* rights which had been purchased by junior members of the family from the elder branch who had no direct heirs.

The rights of a *yoya* holding were as follows: When a member of the family wanted to dig a well, he had to apply to the *twin-sa-yo* for the well-site. In return for this the *twin-sa*, the well-digger, had to pay a small monthly rent to the *twin-sa-yo* according to the quantity of the oil extracted from the well. According to the number of working wells therefore the *twin-sa-yo's* income rose and fell. All members of the corporation, *twin-sa-yos* as well as *twin-sas*, were exempted from the "eight royal services," that is to say, they had no *corvée* duties to perform and no taxes to pay, except the general corporation tax of four hundred rupees a month to the King.

The *twin-gyi-min* was president of the *twin-sa-yos*, and it was he who settled all disputes and who gave final permission for digging. In all such cases he received a small fee, and no one, not even a *twin-sa-yo*, could sink a well without the permission of the *twin-gyi-min*.

The following were the rules as to the wells. No well could be sunk within thirty cubits of an existing well. No well could be sold or mortgaged to a stranger. Every well-owner might dispose of his oil as he pleased.

These rules were rigourously observed until the introduction of the monopoly system about 1856 or 1857, when King Mindôn ordered all the well-owners to sell their oil to him at the rate of one rupee eight annas the hundred viss. Apparently, with the introduction of the royal monopoly, the strictness of many of the old rules was relaxed. At any rate various new practices were in existence at the time of the annexation. Whether the *twin-sa-yos* owned the ground on which the wells were situated or only had the right of sinking them is a moot point, and from the Burman's point of view was a matter of no importance. The soil was much too barren for any kind of cultivation. Apparently when King Mindôn introduced the monopoly system he confirmed in a general way the customary rights of the *yoya* families, but the settlers themselves seem to have broken through their regulations. Not only was the forty-eight feet space between wells not maintained, but wells were mortgaged and even sold outright to strangers, and other laxities crept in.



Photo-Block. Survey of India Offices, Calcutta, 1899.

KACHIN WOMEN.

The British Government, however, treated them generously and gave the following rights to well-owners :—

(1) The right of free sale of their oil.

(2) A royalty of eight annas to be paid on every hundred viss.

(3) An area sufficient for a reasonable extension of the number of pit-wells was set aside, and two square chains, or one-fifth of an acre, was allowed for each well.

(4) Every well-owner had the right of disposing of his well by sale or otherwise.

(5) The well-owners were at liberty to use improved machinery if they chose to do so.

In the Twingôn reserve, of a total area of 296 acres, 23·55 acres were set aside as State wells, leaving 272·45 acres to the *twin-sas*, and in the Bẹmè reserve out of a total area of 153·8 acres, 7·375 were set aside for State wells and 145·625 acres were left to the sole use of the well-owners. The *twin-sas* sell all their oil to the Burma Oil Company, who pay a royalty to Government of eight annas per hundred viss (365 lbs.).

The oil-fields were surveyed and demarcated into blocks of one square mile each in 1890 :—

	Square miles.
Yenangyaung	90·15
Minbu	20·15
Yenankyat	2·34
Total ...	112·64

The output continues steadily to increase, and there are no signs of exhaustion, but on the other hand there seems no prospect of the discovery of flowing wells.

JADE.

The first European who visited the Jade-mines seems to have been Dr. Griffith in 1837. In the preceding year Captain Hannay, on his journey from Ava to the Assam frontier, obtained specimens of a fine green stone at Mogaung, but he did not go to the mines. He believed the mineral to be nephrite and says that "all the "*yueesh* (the proper Chinese name is *Yü shih*) taken away by "the Chinese is brought from a spot five marches to the north-"west of Mogaung, but it is found in several other parts of the "country, though of inferior quality."

Dr. Griffith marched to the mines from Kamaing, a distance of thirty-one miles by the present road. He gives the following account of them (Journal of Travels, &c., Calcutta 1847, page 132):—

"These celebrated serpentine mines occupy a valley of somewhat circular form, and bounded on all sides by thickly wooded hills of no great height. To the north the valley passes off into a ravine, down which a small streamlet that drains the valley escapes, and along this at a distance of two or three miles another spot of ground affording serpentine is said to occur. The valley is small; its greatest diameter, which is from east to west, being about three quarters of a mile, and its smallest breadth from four hundred and sixty to six hundred or seven hundred yards.

"The whole of the valley, which appears formerly to have been occupied by rounded hillocks, presents a confused appearance, being dug up in every direction, and in the most indiscriminate way, no steps being taken to remove the earth, &c., that have been thrown up in various places during the excavations. Nothing in fact like a pit or shaft exists, nor is there anything to repay one for the tediousness of the march from Kamaing. The stone is found in the form of more or less rounded boulders mixed with other boulders of various rocks and sizes imbedded in a brick-coloured yellow, or nearly orange-coloured clay, which forms the soil of the valley, and which is of considerable depth. The excavations vary much in form, some resembling trenches; none exceed twenty feet in depth. The workmen have no mark by which to distinguish at sight the serpentine from the other boulders; to effect this fracture is resorted to, and this they accomplish, I believe, by means of fire. I did not see the manner in which they work or the tools they employ, all the Shans having left for Kamaing, as the season had already been over for some days. No good specimens were procurable."

The mines were not subsequently explored till Dr. Fritz Noetling went there with the expeditions in 1891-92, and what follows is taken from his memorandum on the subject. There are at present two groups of mines, the quarry mines on the top of the hill near the village of Tawmaw, and the river mines in the valley of the Uyu river beginning near Sanka village and extending for several miles down stream. The geographical position of Tawmaw is latitude 25° 44′, longitude 96° 14′; Sanka lies about six miles to the eastwards.

According to all accounts the river mines are the oldest. The quarry mines were discovered only about fifteen years ago. Until within the last few years all the jade came from the river mines, which extend for from fifteen to twenty miles along the banks of the Uyu between Sanka and Tawmaw villages. The mines are easily accessible. Kamaing can be reached by water from Mogaung, and a road runs from there to Sanka and on to Tawmaw.

The hills between the Mogaung and Indawgyi streams consist entirely of tertiary standstones, which contain a few seams of coal.

The tertiary strata are pierced by dark eruptive rocks, which outwardly much resemble serpentine, though east of Sanka they are more like basalt. Dr. Noetling continues :—

"The locality at Tawmaw is of particular interest, because the question of the geological age of the jadeite found here its solution. Although the country is very unfavourable for any kind of geological examination, yet the active digging that has been going on for some time has afforded a very good opportunity for the study of the occurrence of jadeite.

"The dark rock, which for the purposes of this paper we may call serpentine, appears in a fissure of considerable thickness, but apparently of limited length. There is, however, a strange division in this eruptive rock; while the dark green serpentine forms the outer circle, the centre is occupied by a rock of splendid whiteness—the jadeite in fact—which strangely contrasts by its whiteness with the dark dull serpentine. Jadeite and serpentine are, however not in direct contact, but separated by a band of clayey soft serpentine of light green colour. This curious mode of occurrence raises of course all sorts of geological questions about the origin of the jadeite, but all such speculations are useless until the relation of the serpentine and the jadeite has been settled by a chemical and microscopical examination. Two facts are, however, certain :—

(1) Jadeite is found in connection with, and enclosed in, an eruptive rock closely resembling serpentine.
(2) This serpentine pierces strata of perhaps Lower, but more probably of Upper, Miocene age.

"These two facts have a double interest, scientifically as well as practically; scientifically, because it is now proved that jadeite belongs to the group of eruptive rocks of Young Tertiary age; practically, because there are indications that serpentine will be found at more than one locality in this part of Upper Burma. Now, as we know that jadeite is intimately connected with serpentine, it is highly probable that it will be found at other places where serpentine occurs, once the outer shell of serpentine has been pierced."

Mr. W. Warry, who visited the mines with the first column early in 1888, gives the following intresting historical details :—

"The jade stone, or nephrite, has been known in China from a period of high antiquity. It was found originally in Khoten and other parts of Central Asia, and, being of a brilliant white colour and very costly, it was held in high esteem as symbolical of purity in private and official life. The green variety of the stone seems to have been extremely rare, but not entirely unknown, for attempts are recorded to produce this colour artificially by burying white jade in juxtaposition with copper.

"The discovery that green jade of fine quality occurred in Northern Burma was made accidentally by a small Yünnanese trader in the thirteenth century. The story runs that, on returning from a journey across the frontier, he picked up a piece of stone to balance the load on his mule.

"The stone proved to be jade of great value, and a large party went back to procure more of it. In this errand they were unsuccessful, nobody being able to inform them where the stone occurred. Another attempt, equally

fruitless, was made by the Yünnan Government in the fourteenth century to discover the stone; all the members of the expedition, it is said, perished by malaria, or at the hands of hostile hill tribes. From this time onward for several centuries no further exploration in the jade country seems to have been undertaken by the Chinese. Small pieces of the stone occasionally found their way across the frontier, but the exact source of the supply continued unknown.

"The year 1784 marks the final termination of a protracted series of hostilities between Burma and China, and from this time dates the opening of a regular trade between the two countries. Adventurous bands of Chinese before long discovered that the jade-producing districts lay on the right bank of the Uru river, and a small, but regular, supply of the stone was now conveyed every year to Yünnan. Impracticable roads, a malarious climate, and an unsettled country prevented the expansion of the trade. Some twenty or thirty Chinese at the most went up into the jade country each season and a very small proportion of these ever returned. In the Chinese temple at Amarapura is a long list containing the names of upwards of six thousand Chinese traders deceased in Burma since the beginning of the present century to whom funeral rites are yearly paid. The great majority of these men are known to have lost their lives in search for jade. The roll includes only the names of well known and substantial traders. Could the number of the smaller traders and adventurers who perished in the same enterprise be ascertained, the list would be swelled to many times its present size.

"The earliest route followed by the jade traders led from Momein to Kuyung Lien and Chansi on the Yünnan frontier. Here the Kachin hills were entered and a week's journey over exceedingly difficult mountain tracks brought the travellers to Kachin Yimma on the Irrawaddy, a place which appears to lie some little distance above Talaw. The river being crossed here, the parties made their way as best they could towards Hsimu in the valley of the Uru river, which they usually reached after a toilsome march of some ten days. The Hsimu quarries were first discovered in 1790; they yielded a very brilliant jade, pieces of which are said to have been sometimes exchanged at Momein for their weight in silver.

"In 1798 the Chinese traders at Ava, with the assistance of the Burmese Government, opened up a new route to the mines, namely, from Ava to Menrua (Mônywa), thence up the Chindwin and Uru rivers to Serua, from which place the mines then worked were distant some two days' journey by land. The trade in jade now developed rapidly, and Serua, being the depôt, rose into considerable importance. After some years, however, this route became insecure, owing to the hostility of certain Kachin tribes who commenced to waylay and rob caravans; and the original Kuyung route being, for similar reasons, unavailable, another new overland road was adopted, namely, from Katha *via* Mawlu, Mohnyin, and Laotsun to Indaw, and thence three days to the mines.

"The direct road into China *via* Bhamo had been known for centuries, but fear of the Kachins appears to have deterred traders from making a regular use of it. Even cotton from Lower Burma was constantly sent up by river past Bhamo to Senbo or to Talaw, and was conveyed thence by mules into Yünnan. In 1805 the first consignments of jade were sent

down the Mogaung river to Senbo, where they were given into the charge of the cotton caravans; and from 1807, for some years, a favourite route for the jade was from the mines by way of Myuhung (old Mogaung), Tapaw, and Hokat to Talaw on the Irrawaddy, whence the stone travelled overland with the cotton caravans *via* Sima, Ta-chi-ai (the frontier between Burma and the outlying tribes dependent on China), and Santa (the frontier of China proper) to Momein. This route is still used to a small extent. It is under the protection of a powerful Chinese family at Ta-chi-ai called Chao, to whom travellers pay a fixed sum for safe conduct.

"Early in the present century the Burmese Kings seem to have become aware of the importance of the jade trade and of the revenue which it might be made to yield them. In 1806 a Burmese collectorate was established at the site of what is now the town of Mogaung, and a guard of some thirty Burmese troops under a military officer was regularly stationed at the mines during the working season to protect the trade and to maintain order. This force was always accompanied by the *Amatgyi* of the Mogaung district, whose special duty was to control the hill tribes. The principal Kachin *Sawbwas* were also in the habit of meeting the Burmese official in Mogaung and escorting him up to the mines, where they provided him with entertainment during his stay.

"Mogaung now became the headquarters of the jade trade in Burma. Comparatively few Chinese actually went up to the mines; the Kachins themselves brought down most of the stone to Shuitunchun, a sandbank opposite Mogaung, where a large bazaar was held during the season. The Burmese Collector imposed no tax upon the stone until it was ready to leave Mogaung, when he levied an *ad volorem* duty of thirty-three per cent. and issued a permit which was examined by his deputy at Tapaw, one day's journey from Mogaung by river. After this the stone passed freely anywhere in Burma without further charge or inspection. The value of jade was determined for purposes of taxation by an official appraiser. This officer, however, by private arrangement with the traders and the collector, estimated all stone at about one-third of its real value. The actual duty paid was therefore small, and business proceeded smoothly, cases of friction between the traders and the customs officers being of very rare occurrence. All payments were made in bar silver. The metal used was at first fairly pure, but it was soon debased by a large admixture of lead. Rupees did not come into general use until 1874.

"Besides the duty leviable at Mogaung the stone had to bear certain charges, authorized and unauthorized, at the mines and at Namya-Kyauk-seik, one day's journey from the mines:—

(1) The Burmese officer at the mines imposed a monthly tax of one *tael* (about four annas) on everybody who came to trade; from this charge Burmans and actual workers in the mines were exempt.

(2) A further sum of 2·5 *taels* (about ten annas) was charged for a pass, which was issued for each load of jade leaving the mines for Namya-Kyauk-seik.

(3) At Namya-Kyauk-seik four *taels* (about a rupee) was paid on the arrival of every load to an agent of the Mogaung Collector permanently stationed there. Of these charges the

Chinese regarded the first and third as legitimate and the second as unauthorized gratuity to the subordinates of the mines officer. All the above charges seem to have varied slightly from year to year.

"The Kachins levied no toll or stone at the mines, or proceeding down to Mogaung. Their rights appear to have been well understood and respected. They were regarded as the absolute owners of all the stone produced in their country. This ownership was never directly called in question by the King of Burma. The farthest length he went in this direction was to exclude all competition during the years when he bought jade from the Kachins. The Kachins on their side acknowledged the sovereignty of the Kings of Burma by admitting his officers to the mines, by allowing them to purchase a certain quantity of stone for the King's use at a nominal price, and by acquiescing in certain charges imposed by these officers and in certain interferences at the mines whereby the price of their stone was injuriously affected.

"Under this system the jade trade continued to flourish for many years. The period of its greatest prosperity is comprised within the years 1831—40, during which time at least eight hundred Chinese and six hundred Shans were annually engaged in business, or labour at the mines. All the stone was sent by one of the above-mentioned routes to Yünnan-fu, at this time the great emporium of the trade. The business there was mainly in the hands of Cantonese merchants, who brought the rough stone in large quantities and carried it back to be cut and polished at Canton.

"In 1841 war broke out between Great Britain and China. Hostilities first commenced at Canton, and the effect on the jade trade was not long in making itself felt; Cantonese traders no longer came to buy stone at Yünnan-fu. Stocks accumulated and Yünnan traders ceased to go up to the mines. The Kachins, suffering from this stoppage of business, made urgent representations to the Burmese at Mogaung; and in 1842 a Burmese officer proceeded from Mogaung to Momein to enquire if any offence had been given to Chinese traders that they did not come as usual to the mines.

"There was a partial revival of the trade for a few years commencing with 1846, but the disturbed State of Southern China, consequent upon the Taiping rebellion of 1850, prevented a complete recovery; and with the outbreak of the Panthay rebellion in 1857, the roads leading to Yünnan-fu were blocked and all business in jade came to a standstill for several years.

"During the early part of the period passed in review, the Chinese estimate that the average amount of duty collected each year did not exceed six thousand rupees, the output of jade being small and the official appraisers venal. About the year 1836, when the trade was most flourishing, twenty-one thousand rupees was the probable amount of the annual collection. After 1840 the duty fell to three thousand rupees, or less, and then it dwindled away to nothing. The above estimates are probably below the mark, as the Chinese would, for obvious reasons, be inclined to under-state the real amount.

"The year 1861 witnessed a great improvement in the jade trade. From that date until now the bulk of the stone has been carried by sea to Canton.

In 1861 the first Cantonese merchant arrived in Mandalay. He bought up all the old stocks of jade and conveyed them to China by sea, realizing a large fortune on this single venture. His example was quickly followed by other Cantonese, and once more the trade in jade revived and numerous Yünnanese went to the mines. The principal quarries were now at Sanka. Stone had been discovered there many years before, but had been pronounced poor in quality and scarcely worth the trouble of working. Now, however, upon a second trial, it proved to be equal or superior to that from the earlier mines, the colour having, as the Kachins alleged, matured and deepened in the interval. The yearly duty collected at this time probably amounted to at least twenty-seven thousand rupees.

"Hitherto the collection of the duty had been in the hands of an official who had paid a very high price at Ava for his appointment and who was in the habit of remitting to the capital only as much as he thought fit—usually about one-fifth of the actual receipts. In 1866 the tax was farmed out for the first time. The price obtained was sixty thousand rupees for a three years' lease. At the expiration of this term the King, dissatisfied with the amount of the jade revenue, determined to buy all the stone from the Kachins himself, and he appointed a high official to act as his agent at the mines. For a whole season Chinese and other dealers were excluded from the mines; as the stone was dug up it was purchased by the King's agent, carried to Mogaung and there retailed to the traders. This arrangement was, of course, highly unsatisfactory to the Kachins, who first protested against the exclusion of other purchasers and then, finding their protest of no avail, resorted to the much more effectual method of curtailing the supply of stone and producing only pieces of indifferent quality. For this reason the King's experiment was a failure, and the total revenue he secured did not equal the proceeds derived from the sale of the monopoly in the preceding year. The Chinese explain the failure on other grounds. The experiment, they say, was doomed from the outset 'owing to the inherent impropriety of a sovereign descending into the arena of trade and taking the bread out of the mouths of his own subjects.'

"During the years 1870, 1871, and 1872 the King obtained an annual remittance of twelve thousand rupees from the Collector at Mogaung on account of the jade duty. In the following year new deposits of fine jade were discovered at Mantien-mo and the King again determined to become the sole purchaser from the Kachins. On this occasion, too, the revenue he realized fell far below the average of former years.

"In 1874 the old system was reverted to and the collection amounted to six thousand rupees. Once more in 1875, the King undertook to buy the stone himself from the Kachins and again the experiment failed, though not so badly as on the two previous attempts. About this time the Iku quarry was discovered, and the output being very good, the right of collecting the duty was sold in 1876 for three years for the sum of sixty thousand rupees. In 1880, Wu Chi, the son of a Canton Chinaman by a Burmese mother, obtained a three years' lease of the monopoly at the rate of fifty thousand rupees a year. In the second year of his term the Tawmaw quarries were opened and he made an immense fortune.

"In the autumn of 1883 Mogaung was sacked by the Kachins, and during the ensuing winter and spring there was no trade in jade. In June

1884, order having been partially restored, a Chinese syndicate, represented by Li Te-su, took the monopoly for three years, agreeing to pay ten thousand rupees the first year, fifteen thousand rupees the second, and twenty thousand rupees the third.

"The up-country was still unsettled, and the lessees, by arrangement with the traders, were permitted to collect duty at Bhamo, instead of as heretofore at Mogaung. During the first two years of their term, owing to the disturbances connected with the adventure of Hsiao Chin and the British occupation of Upper Burma, they collected little or no duty; but the proceeds of the third year left them with a margin of twenty thousand rupees over and above their total expenses for the three years.

"The tax was then farmed out by the British Government to Lôn Pein. Matters between him and the jade merchants did not proceed smoothly. Lôn Pein from the first was very strict in exacting his rights. He taxed every piece of jade at Bhamo and Mandalay that did not bear plain marks of the stamp of his predecessor, and he declined, contrary to the practice of all his predecessors, to make allowance in cases where the stamp had been obliterated through frequent washing of the stone or by long storage under-ground. He also refused to admit free of duty certain small re-imports of stone from Momien about which previous lessees had made no difficulty. So far Lôn Pein was acting within his strict legal rights. His action in other respects was more questionable. No duty had ever been collected at Mogaung until the stone was reported ready to leave the place, when duty was paid and a pass issued. Stone might thus remain at Mogaung for years and change hands many times without being subjected to any charge. Lôn Pein, however, insisted that all jade should pay duty to him within five days from its arrival at Mogaung. This new regulation bore very hard upon the small trade in jade. For example such a man might have been lucky enough to secure a stone worth a thousand rupees. On his arrival at Mogaung Lôn Pein would say to him. 'I value your stone at five hundred rupees: pay me the duty (one hundred and sixty-six rupees) within five days.' In many cases the owner would not be able to raise this sum at so short a notice; and, if he failed to do so, Lôn Pein claimed to buy the stone at his own valuation, that is to say, for just half what it was really worth.

"In addition to rendering himself obnoxious to all traders in jade, Lôn Pein had aroused the apprehensions of the Kachin owners of the mines. He had made no secret from the first of his intention not merely to collect the duty, but to get the actual management of the mines into his own hands. When the Chinese and Kachins, by way of reprisal, stopped the supply of jade for some weeks, he openly announced that 'this did not matter, for the English were shortly coming to put him in armed possession of the mines, which he then intended to work with imported labour from Singapore.' The result was that he was attacked in December 1887 and received wounds, of which he afterwards died.

Subject to the geological conditions indicated by Dr. Noetling as quoted above, the jade-producing country may be described as lying between the twenty-fifth and twenty-sixth parallels of latitude and enclosed east and west by the Uyu and Chindwin rivers. Small

quantities of jade have been found at one time or another over all this tract. The names of the quarries most celebrated in times past for the excellence of their output are Hsima, Masa, Mopang, and Tamukan. They have all ceased to yield jade except in minute quantities, and are now termed the "old mines," Sanka being the latest name added to the list.

Jade crops out at few points beyond the area thus described. At Mawhun, one day's march on the road from Mohnyin to Katha, there is an old quarry which was formerly very rich. The Chinese also speak of a place called Nantelung, meaning "difficult of access," or the "unapproachable place," as producing jade of remarkable brilliancy and value. "It is described as a large cliff overhang-"ing the Chindwin, or a branch of that river, and distant eight or "nine days' journey by boat from the confluence of the Uyu and "Chindwin, the country passed through being very malarious and "infested with wild animals and savage tribes. The stone can "only be obtained by swarming up the face of the cliff with the aid "of ropes and dislodging small portions with a hammer. The "water underneath is deep and the stone is thrown down into boats "specially strengthened by a double platform of bamboo erected "across the deck. Many pieces are lost in the river, and cannot "be recovered except by expert divers." Mr. Warry has seen pieces of jade in Peking said to come from Nantelung.

Formerly the jade was obtained only from the mines in the Uyu valley, where it was found in the shape of boulders, mixed with other rocks in the alluvial deposits of the river. Not unfrequently isolated boulders are found embedded in laterite. Such pieces are particularly appreciated, not only because the stone is always sound, but on account of the peculiar red crust which enveloped the core. "This red jadeite," Dr. Noetling says, "was very likely formed "under the influence of ferruginous solutions percolating the laterite "and permeating the outer part of jadeite boulders therein de-posited." The boulders were obtained either by digging holes along the bank of the stream or by diving to its bottom. Formerly specially trained men were employed, but latterly an enterprising Chinaman has introduced a diving-bell. Sanka, the last of the "old mines," is situated on the right bank of the Uyu, just opposite its junction with the Nanthan stream. Some twenty years ago Sanka was celebrated for its output of fine jade, but the supply is nearly exhausted and the place is now almost deserted. Thousands of old pits may be seen dug along the sides of the low hills and in the small intervening valleys. The diameter of the pits rarely exceeded ten or twelve feet at the mouth and the average depth is about twelve feet. The "new mines" at Tawmaw have produced

immense quantities of stone, but none which approaches in quality that yielded by the pits of former years. The market for jade lies entirely in Burma and China; it may therefore be well to specify what determines its value. This varies to an enormous extent. The Chinese in particular value a good piece of jade as much as gold. A small piece, of a size that would fit a signet ring, might fetch four hundred or five hundred rupees, though in Europe it would be worth no more than a cairngorm if so much. Mr. Warry writes as follows :—

"The value of jade is determined mainly by the colour, which should be a particular shade of dark-green. The colour, however, is by no means everything; semi-transparency, brilliancy, and hardness are also essential. Stone which satisfies these four conditions is very rare. The last three qualities were possessed to perfection by a large proportion of the old stone, but the dark-green colour was rare and often absent altogether. The new stone, on the other hand, possesses abundant colour, but is defective in the other three respects, being as a rule opaque, dull, and brittle in composition. These natural defects are aggravated by the injurious methods employed in quarrying the new stone. A peculiarity which gave high value to all stone found at the old mines was that it occurred in the form of moderate-sized round lumps, having often the appearance of water-worn boulders, and small enough to be detached and carried away without undergoing any rough process of cleavage on the spot. At the new mines the stone occurs in immense blocks which cannot be quarried out by any tools possessed by the Kachins, but have to be broken up by the application of heat, a process which without doubt tends to make the stone more brittle and chalk-like.

"These defects were not realized the first year that the new mines were opened. The output of stone was large and the competition keen. Hitherto only men of some capital had been able to regularly engage in the trade. It had been impossible to do more than guess at the value of any old stone, for each piece was complete in itself and was usually protected by a thick outer capsule which effectually concealed the colour within. All pieces therefore fetched a high price, as any piece might on cutting prove to be of immense value. But with the opening of the new mines stone could be bought in fragments of any shape and size, and it became possible by the processes of washing and holding in a strong light to determine with comparative exactitude the amount and nature of the colour. The trade was thus brought within the means of a large number of men who had not before been in a position to take part in it. There was accordingly a rush for the new mines in 1881, and the speculation in jade attained a height not reached before. Large fortunes were made by those who had the good luck to dispose of their stone before its defects were discovered. In the second year there was a heavy fall in prices, which involved the ruin of more than one of the largest jade merchants."

The method of extraction is very primitive and also very slow. Blasting powder is, of course, not allowed, and would probably be in any case too expensive. The surface of the rock is therefore

heated by large fires, and the fall of temperature during the night is sufficient to crack the jade without any necessity for pouring cold water on it. Crow-bars and wedges are then driven into the cracks and large blocks are obtained, which are then broken up with fore-hammers and large mallets to shape them to a size convenient for transport.

The Tawmaw mines (others are named Pang-maw, Iku, Matien-maw, and Mien-maw) are about seven and a half miles from Sanka. The road passes through fine forest scenery, the *kanyin*, the *gungaw*, and the cotton-wood being the prevailing trees, and ascends to a broad plateau, hundreds of acres in extent, the whole of which is cleared for mining purposes. When Professor Noetling visited the mines in March 1892, "there existed a large quarry of about "one hundred yards in length divided into two pits, which were "separated by a wall of refuse. The western pit was deeper than "the eastern one, but considerable difficulty was experienced on "account of a large influx of water which oozed out from the "fissure separating the serpentine from the jadeite. To meet with "the water the natives had constructed clumsy pumping machines "consisting of a large lever to which long bamboos tied together "were fastened; a bucket, usually an empty kerosine-oil tin, served "for bringing up the water. The bucket was lowered to the bottom "of the pit and, when filled, hauled up and emptied into a gutter "resting on an elaborate bamboo structure, which nearly covered "the whole pit. It is a quaint sight to see these numerous pumps "at work, as it looks as if the whole pit was covered with an "enormous spider's web, being in constant motion."

During the dry season about seven hundred men are frequently steadily employed. Tons upon tons of stone lie about, valuable in China, but not sufficiently valuable to re-pay the cost of transport and the charges by the way. The Kachins of the gold tract have never given us any trouble by rising, and are even said to be honest. Probably they have a shrewd eye to the profits from the mines, and they have the reputation of being the most superstitious of all the Kachin tribes. Mr. Warry says:—

"The remoteness of their country, the wildness of the scenery, the peculiar nature of the climate—healthful to them, but deadly to strangers—the frequent earthquakes, and violent atmospheric disturbances, seem to have inspired in them a more devout belief in the unseen powers and a readier disposition to consult them on the most trivial subjects. In important matters, such as the discovery or the opening of a jade mine, their action is entirely determined by superstitious considerations. In their search for stone they are guided by indications furnished by burning bamboos; when it is discovered favourable omens are anxiously awaited before the discovery is announced to the Kachin community. A meeting is then

convened by the Chief Sawbwa and again sacrifice and other methods of divination are resorted to, in order to ascertain if the mine should be worked at once, or be allowed to remain undisturbed for a period of years until the colour—such is the Kachin's belief—is sufficiently matured. If the indications are favourable to the immediate opening of the mine, the land at and around the outcropping stone is marked out by ropes into small plots, a few feet square, which are then apportioned among all the Kachins present. No Kachin belonging to the same family is refused a share, no matter how far away he may live."

Apparently, however, any Kachin can for a small fee get a digging lease from the Kansi *Duwa*, who claims to be proprietor of all the mines. All the jade he then obtains is his own property, which he is free to dispose of as advantageously as he can, the buyer paying the royalty. There is, however, an additional condition that, if a very valuable block is found, half of the price received goes to the *Duwa*.

A new mine is opened with elaborate ceremonial, and a similar ceremonial is held at the beginning of each digging season. This begins in November and lasts till May, when the unhealthiness of the climate compels all traders to leave, and the flooding of the mines suspends further operations on the part of the Kachins. Mr. Warry continues :—

"This flooding of the deepest and most productive quarries is the greatest difficulty with which the Kachins have to contend, and they have spent much labour and money in devising expedients, with indifferent success, to meet it. When the floor of the pit can be kept dry for a few hours, and this is, as a rule, only possible in February and March, immense fires are lighted at the base of the stone. A careful watch must then be kept, in a tremendous heat, in order to detect the first signs of splitting. When these occur the Kachins immediately attack the stone with pickaxes and hammers, or detach portions by hauling on levers inserted in the crack. All this must be done when the stone is at its highest temperature, and the Kachins protect themselves from the fierce heat by fastening layers of plantain leaves round the exposed part of their persons. The labour is described as severe in the extreme, and such as only a Kachin would undertake for any consideration. The heat is insupportable, even for onlookers at the top of the mine, and the mortality among the actual workers is very considerable each season. The Chinese take a malicious pleasure in reminding the Kachins that in the early days when quarrying was easy the right of digging was jealously withheld from outsiders; and they assure them that under present conditions they need not be apprehensive of an infringement of their monopoly.

"The stone is purchased at the mines by Chinese traders. All payments are made in rupees. An expert, or middleman, is nearly always employed to settle the price. These middlemen, who are without exception Burmese, or Burmese-Shans, have from early times been indispensable to the transaction of business at the mines. They charge the purchaser five *per cent.* on the purchase money."

The demand for jade is universal throughout China, with its population of four hundred and fifty millions, and the price of the best stone shows no tendency to fall. Burma is practically the only source of supply, and there is a nearly inexhaustible quantity of it available. The introduction of European appliances and systematic mining operations and the substitution of dynamite for the present injurious method of working the quarries would enormously increase the output and the value of it. But, as Professor Noetling says:—

"Shall we ever see the spectacle of an European company exploiting the wealth of the jadeite mines instead of a disorderly crowd of Kachin ruffians? I am afraid not, because the difficulties to be overcome will eventually prove too great, unless they are disposed of with a little high-handedness; otherwise I am afraid that the revenue of a concern capable of paying a handsome sum every year will dwindle down to a mere nothing."

Up to the present there are no signs of interruption of the old traditional methods. The workings remain in the old hands, and the right to collect the jade duty of $33\frac{1}{3}$ per cent. is farmed out to a lessee. The amount obtained in 1887-88 was Rs. 50,000 for the year. This dwindled to Rs. 36,000 in 1892-93, but the system was then adopted of letting for a term of three years. Jade-mining is essentially speculative, and the longer lease gave the lessee a chance of recovering on bad years. The result was that for the first triennial term a sum of Rs. 52,100 a year was obtained. The total weight of jade extracted in 1896-97 was two thousand nine hundred and ninety hundred-weights, valued at one lakh and fifty thousand three hundred and forty one rupees.

Amber.

The amber of the mines in the Hu Kawng valley proves to be entirely different from the Baltic amber, or succinite, which is the most familiar of the fossil resins. The Burmese *payin* is in fact quite distinct from any other known fossil resin, and Dr. Otto Helm of Danzig, to whom Dr. Fritz Noetling, of the Geological Survey of India, sent specimens for analysis in 1892, suggests that it should be named *Burmite*. Since, however, the general outward appearance of the two is similar, there seems no reason why the name Burmite should be any more generally adopted than the scientific term succinite has been up to the present. It is, however, interesting to photographers to know that, while the characteristic of Baltic amber is succinic acid, the results of a dry distillation of the Burmese amber-like fossil resin produce crystals of pyrogallic acid, while the aqueous distillate contains formic acid.

The following account of the amber is taken from the note of Dr. Fritz Noetling, who visited the mine with an expeditionary force

in 1891-92, stayed there for a fortnight, and had about a dozen pits dug in various places.

Previous to his visit no one seems to have reached the amber mines, except Captain Hannay and Dr. Griffith, who curiously enough succeeded one another at an interval of only twelve months.

Captain Hannay (T. As. Soc., Bengal, Volume VI, April 1837), visited Mainghkwan and from there the Amber Mines in March 1836. The following is his account:—

"We set out at eight o'clock in the morning and returned at 2 P.M. To the foot of the hills the direction is about 25° west, and the distance three miles, the last mile being through a thick grass jungle, after which there is an ascent of one hundred feet, where there is a sort of temple, at which the natives on visiting the mines make offerings to the *nats* or spirits. About one hundred yards from this place the marks of pits where amber has been formerly dug are visible, but this side of the hill is now deserted, and we proceeded three miles farther on to the place where the people are now employed in digging, and where the amber is most plentiful. The last three miles of our road led through a dense small tree jungle, and the pits and holes were so numerous that it was with difficulty we got on. The whole tract is a succession of small hillocks, the highest of which rise abruptly to the height of fifty feet, and amongst various shrubs which cover these hillocks the tea-plant is plentiful. The soil throughout is a reddish and yellow coloured clay, and the earth in those pits which had been for some time exposed to the air, had a smell of coal-tar; whilst in those which had been recently opened, the soil had a fine aromatic smell. The pits vary from six to fifteen feet in depth, being, generally speaking, three feet square, and the soil is so stiff that it does not require propping up.

"I have no doubt that my being accompanied by several Burmese officers caused the people to secrete all the good amber they had found, for, although they were at work in ten pits, I did not see a piece of amber worth having. On making enquiry regarding the cause of the alleged scarcity of amber, I was told that want of people to dig for it was the principal cause; but I should think the insufficiency of the tools they use was the most plausible reason, their only implements being a bamboo sharpened at one end and a small wooden shovel.

"The most favourite spots for digging are on such spaces on the sides of the small hillocks as are free from jungle, and I am told that the deeper the pits are dug the finer the amber; and that kind which is of a bright pale yellow is only got at the depth of forty feet underground."

A little previous to this Captain Hannay says:—

"Besides the amber which is found in the Payentaung, or amber hills, there is another place on the east side of the valley, called Kotah-bhum, where it exists in large quantities; but I am informed that the place is considered sacred by the Singphos, who will not allow the amber to be taken away, although it is of inferior description."

Dr. Griffith, in "Journals of Travels in Assam, Burma, &c.," by William Griffith, Bishop's College, 1847, writes as follows on page 77:—

"*March 26th (1837)*.—Visited the amber mines, which are situated on a low range of hills, perhaps one hundred and fifty feet above the plain of Meinkhôn, from which they bear about south-west. The distance of the pits now worked is about six miles, of which three are passed in traversing the plain and three in the low hills, which it is requisite to cross. These are thickly covered with tree jungle. The first pits, which are old, occur about one mile within the hills. Those now worked occupy the border of a low hill, and on this spot they are very numerous. The pits are square, about four feet in diameter, and of very variable depth. Steps, or rather holes, are cut in two of the faces of the square, by which the workmen descend and ascend. The instruments used are wooden tipped with iron, crow-bars, by which the soil is displaced. This answers but very imperfectly for a pick-axe; small wooden shovels, baskets for carrying up the soil, &c., buckets of bark to draw up the water, bamboos, the base of the rhizoma forming a hook for drawing up the baskets, and the Madras lever for drawing up heavy loads.

"The soil throughout the upper portion, and indeed for a depth of fifteen to twenty feet, is red and clayish and appears to enclose but small pieces of lignite. The remainder consists of greyish slate clay increasing in density as the pits do in depth. In this occur strata of lignite imperfectly formed, which gives the grey mineral a slaty fracture, and among this the amber is found. The deepest pit was about forty feet; and the workmen had then come to water. All the amber I saw, except a few pieces, occurred as very small irregular deposits and in no great abundance. The searching occupies but little time as they look among the lignite, which is at once obvious. No precautions are taken to prevent accidents from the falling in of the sides of the pit, which are in many places close to each other (within two feet), but the soil is very tenacious.

"We could not obtain any fine specimens; indeed at first the workmen denied having any at all, and told Mr. B. that they had been working for six years without success. They appear to have no idea as to favourable spots, but having once found a good pit, they of course dig as many as possible as near and close together as they can. The most numerous occur at the highest point now worked. The article is much prized for ornaments by the Chinese and Singphos, but is never of much value, five rupees being a good price for a first-rate pair of earrings. Meinkhôn is visited by parties of Chinese for the purpose of procuring this article."

The Hu Kawng valley, where these mines, famous for centuries for the golden resin, are found, forms an extensive flat basin, surrounded on three sides by lofty hill ranges, which are nearly impassable, and rise in the Patkoi range to about seven thousand feet. The valley is only really accessible from the south, where the low hills forming the watershed between the Chindwin and the Irrawaddy offer no difficulty. Innumerable streams and rivulets run from both sides to the centre of the basin and unite to form the Tanai *Kha*,

which is the chief branch of the Chindwin. There are many villages scattered about the valley, and the soil is very fertile. It is flat in the centre, but farther back low isolated hills and short ridges rise abruptly from the plain. It is on these low ranges, in the south-west corner of the Hu Kawng basin, that the mines are found, in about 26° 15′ north latitude and 96° 30′ east longitude. All the existing mines, or all that are known to exist, are found in nine different localities on a single range, called by Dr. Noetling, the Nango-Tai-maw. This ridge runs north and south and is about five miles long, but the mines are all close together at the northern end, nearest to the village of Mainghkwan, which is distant about three miles. There seems little doubt that this is the same place as was visited by Captain Hannay and Dr. Griffith. The ridge is about one hundred and fifty feet only above the plain, from which it rises abruptly, and the top is so nearly on one level that Dr. Noetling thinks that probably it once formed a terrace skirting the higher ranges. It is covered with such dense impenetrable jungle that a proper geological examination could only be made after extensive clearing. Dr. Noetling heard from Chinese traders that the most productive mines were at Lalaung, a village at the southern end of the range, but this statement he was not able to verify either from native admissions or by a personal visit.

The strata of all the hills seem to be of Tertiary formation, but in the northern hills there appear also to be Mesozoic strata, probably belonging to the cretaceous formation. The Tertiary strata consist chiefly of sandstones of yellowish colour, with a layer of brown clay now and then embedded. No fossils were found, "but to "judge from the petrographical appearance, I should think that the "yellow sandstones which I found on the southern and western side "of the valley are contemporaneous to those which I distinguished "as 'Irrawaddy sandstone' in the Irrawaddy basin. These belong "undoubtedly to the Upper Miocene. Blue clay, which is found in the hills to the west, belongs to the Lower Miocene age. The blue clay of which the Nango-tai-maw ridge consists is, Dr. Noetling considers, certainly of the Tertiary age. From the strike of the strata, which nearly coincides with the axis of the hill, he is of opinion that the bed which contains the amber traverses the hill along its centre and thus renders the presence of the fossil resin at Lalaung very probable. This is important on account of the very small outturn of amber from the mines visited, compared with the amount of amber which is known to have been exported, and seems to indicate that Dr. Noetling did not see the most productive mines.

The blue clay is superficially discoloured and changed into a dull brown by the oxydising influence of organic acids, produced by a luxuriant vegetation. The same causes affect the amber in such positions. It loses its colour, becomes dull and brittle, and a crust of decomposed amber often covers only a very small second kernel. The fossil resin occurs in irregularly distributed pockets, some of which are much larger than others, and is usually found in flat pieces, which suggest that it is much travel-worn.

In its physical qualities Burmese amber is a little harder than the older known deposit. It is easily cut and takes an excellent polish, but there are many inclusions, usually thin films of calcspar. There is less variety of colour than in Baltic amber; in fact there are only three shades of one colour. The original colour is a bright pale sherry yellow; darker shades lead to a reddish tint, which merges into dirty brown, like colophony or congealed petroleum. The fine, cloudy, milk-white tints do not seem to be found, but the quality known to the German amber dealer as "bare" seems to be fairly common. Burmese amber is characterized by a strong fluorescence, that is to say, a bluish tinge, exhibited when light is thrown into it at a certain angle. According to Dr. Helm, the darker varieties contain much organic matter, probably minute fibres of wood, but there are numerous films of calcspar, which filled in cracks in the resin as it was drying and greatly decrease the commercial value of the amber. A few insects have been found in it. The native mode of extraction is very primitive. After the harvest is over the diggers set to work. A spot is not chosen according to any principle or traditionary rule. The ordinary method is to sink as near as possible to a spot where amber has been found before. If none is found, another place is tried. All the tools are home made. They are a small pointed wooden pick, a wooden shovel, and a basket made of split bamboo. The basket is drawn up by a length of cane, with a piece of root left as a hook; occasionally a well-to-do digger has an iron shoe on his hoe or pick. The hoe loosens the soil and the loose earth is removed by the basket and the cane. The shaft is square and is just wide enough to allow a man to do the digging. He climbs in and out by means of steps cut on opposite sides of the shaft. The clay is so stiff that walling is not required. Dr. Noetling saw no pit deeper than forty-five feet. If nothing is found at that depth, the shaft is abandoned. Three men usually form a party; one man digs a three hours' shift, and the other two sit and smoke at the pit's mouth and draw up baskets full of earth when required, until their turn comes to go below. The presence of pockets is usually indicated by strings of coaly matter appearing in the clay. If the pocket is too large to be worked out

from one shaft, others are sunk as close as possible to it and hands are joined below. A cluster of old pits therefore always shows where a pocket has been found. At present the discovery of the amber is a mere lottery, and, while Dr. Noetling was there, it appeared to have few prizes. He employed twelve coolies, dug twelve pits in a fortnight's time, and did not get enough amber to pay his men. He is not more reassuring as to the value of the amber. It has three good qualities: it is hard, easy to cut and polish, and it is very resistent against solvents. On the other hand, the colour is not good and there are so many inclusions that even large pieces are usually unfit for cutting. This last characteristic, the presence of numerous fissures, filled with calcspar and the like, is the most serious drawback, for, though a process exists by which small pieces can be welded together into one lump, the probability is that these artificial lumps would not sell sufficiently well to warrant the experiment.

Even in Mandalay the succinite or Prussian amber is easier to procure and cheaper than the Burmese amber. Dr. Noetling's conclusion therefore is that the amber mines of Burma are not likely to be a profitable source of revenue.

Nevertheless it has been largely used for centuries by the Burmese, and the cutting and polishing was formerly quite an industry in Mandalay and previous capitals. The chief articles produced were beads for rosaries, *nadaungs* (ear cylinders), and various trinkets in the shape of elephants, monkeys, fish, and the like. Figures of Gaudama were also occasionally carved. Since the annexation the price has risen considerably. Formerly a viss (3·65 pounds) cost Rs. 25.

The manufacture of beads, which is the commonest article, is very simple. The amber is cut into small cubes with a sharp knife; the corners are cut off and a hole is drilled with a flat-edged needle fitted into a bamboo. The bead is then shaped with a file curved at the upper end, and finally polished, first with a dried leaf, which contains a considerable quantity of silica, and then with petrified wood.

Dr. Noetling found amber also at Mantha in the Shwebo district on the Irrawaddy, in a hard coaly clay, underlying a coal seam, in strata of Miocene formation. The resin is very common, but the pieces are small and difficult to extract, not only because they are very brittle, but also because the clay is hard. A single piece of amber was also found at Yenankyat in the Pakôkku district among the refuse dug from an old earth-oil pit, together with numerous Miocene fossils of marine type. Apparently, therefore,

amber is widely distributed through the Tertiary strata of (probably) Lower Miocene age in Upper Burma. The only place, however, where it is systematically worked is in the Hu Kawng valley, beyond the administrative frontier. The amount produced does not seem to increase, for no doubt most of it comes southwards to the Myitkyina district; the outturn in 1896-97 was about fourteen hundredweights valued at two thousand three hundred and thirty rupees.

Salt.

Salt is manufactured at various places in Upper Burma, notably in the Lower Chindwin, Sagaing, Shwebo, Myingyan, and Yamèthin districts, and in small quantities in Minbu and Meiktila, as well as at Maw-hkeo, in the Hsi Paw Shan State.

Upper Burma salt.

The areas from which the salt is obtained have been spoken of as wells, but this is a somewhat loose phrase. Most consist of simple fields, the soil of which is saturated with brine. This soil is collected and piled in heaps. A cauldron-shaped hollow is made in the heaps, and plastered with mud to smooth the surface. At the bottom a bamboo tube is inserted horizontally. The soil from the extreme edges of the heap is then put into the cauldron and three ordinary sized jars of water are poured on it. The water filters slowly through and is caught in a jar placed below the bamboo runlet.

The cauldron-shaped holes in the heaps of salt-earth seem always to be of the same size, and the reason for this appears to be that the three jars of water poured in are just capable, after filtration through the mound, of filling the receiving jar, but no more. There is thus no wastage, and there is no necessity to post a man to watch a filtering cauldron. One man can keep several cauldrons working at the same time. The brine from the receiving jars is taken to the house and there boiled in iron or earthen vessels until all the water is evaporated.

Another method adopted is as follows: water, more or less saturated with salt, is occasionally found to exist beneath a field. When this is the case a well is sunk and the brine is drawn up in buckets. Unless, however, it is very heavily impregnated with salt, it is not boiled down, but is poured over the surrounding fields. The water very rapidly evaporates and leaves the salt on the surface. When enough has thus been deposited the soil is collected and dealt with in the fashion described above. The system seems laborious, but is said to save time.

The size of the salt-fields varies very considerably, and the quantity of brine in the soil is also very unequal in different places. In

the village of Halin in the Shwebo district, one of the chief centres of the salt industry, it was found that two cauldrons of the average size, worked continuously, gave three outturns of salt in the day, each outturn producing about four viss. Two boiling cauldrons are usually worked side by side, but in some houses three or four cauldrons are kept going.

These cauldrons are ordinarily of iron and are almost always of the same size. In some houses, however, ordinary earthen *ghurras*, firmly fixed into mud ovens, are used, some four or five or even six of them heated by the same furnace.

In some fields the deposit is so slight that the extraction of salt only goes on for a month or two in each year. In others the manufacture is carried on as long as the weather permits, that is to say, from the beginning of November to the end of April, or sometimes until the end of May, if the rains are late.

The supply seems to be inexhaustible. Brine is drawn up from the sub-soil to the surface during the dry months and the only limit to the amount capable of being turned out appears to be the demand for it.

Up to 1874 the King of Burma interfered in no way with the manufacture and sale of the salt, except that an export duty of eight annas per hundred viss was collected at riverine stations such as Thitseingyi, Sheinmaga, and Kyaukmyaung. The smaller quantity of salt which went to surrounding villages apparently paid no duty. No one had the monopoly of sale, or of purchase at the wells.

In 1874, however, Mindôn Min made an attempt to obtain the monopoly of purchasing the salt for the crown in the following way. Exemption from payment towards the support of the cavalry or other regiments in Mandalay, together with a loan of ten rupees in cash, was promised to each worker of salt who would enter into an agreement to sell all his salt to the King at a fixed rate of five rupees the hundred viss, and also to pay his *thathameda* tax in salt at the same valuation. These terms were accepted in Shwebo by about two thousand workers, and the salt bought by the King under this arrangement amounted to about five hundred thousand viss in the year. It was all carted to Thitseingyi at a cost of ten annas the hundred viss, and was conveyed thence by Royal steamers to Mandalay, where the King sold it at a very large profit to ordinary traders. Nevertheless, after continuing for two years, the arrangement was stopped, and the old method was resorted to, by which eight annas customs tax was paid on all salt exported.

This arrangement referred only to *bobabaing* or private salt-workings. Besides these there were some three hundred royal workings (*ayadaw*), and for the management of these the King employed a salaried officer on one hundred rupees a month.

Including the three hundred royal wells, it is believed that there were about three thousand salt-workings in Shwebo in King Mindôn's time. They fell off greatly afterwards and in October 1889 there were only about six hundred, of which thirty were Government wells, being worked. From this date, however, they began rapidly to increase in number, and on the 1st April 1890 there were one thousand one hundred and eight *bobabaing* wells, and fifteen royal wells, or a total of one thousand one hundred and twenty-three workings. The system then adopted was that each private well paid a tax of five rupees, and each royal well twenty-four (*i.e.*, the value of four hundred viss of salt, the old Burmese rate).

In July 1888 the Chief Commissioner directed that in districts in which no tax had hitherto existed a tax of five rupees the pan should be imposed, and in districts where a tax had existed a tax of ten rupees the pan. In the Shwebo district a tax of eighteen rupees for each salt-well had existed, and this tax was allowed to remain unaltered.

Salt in the Shan States.

The salt-well at Maw Hkeo (Burmanized into Bawgyo) in the Hsi Paw Shan State is said to have been worked intermittently for the last five hundred years. The old system of working was that the *Sawbwa* received half the profits and the other half was retained by the workmen. Maw Hkeo is about five miles from Hsi Paw town, on the cart-road and Mandalay-Kun Lông railway. Of this salt spring Dr. Fritz Noetling writes :—

"It is a rule that great faults are usually accompanied by springs following the line of disturbance. The great fault which begins near the Ho Küt pass, and extends probably far beyond the Salween, is no exception to this rule. Its way is marked by several springs, the water of which is more or less alkaline, and the temperature of which reaches the boiling point in some cases. It is of course only the salt springs that are of special economic value, as under skilful management they might prove an exceedingly profitable source of revenue. For the present only one spring is known, from which salt is produced by the ordinary method of evaporating the brine in cauldrons. This salt spring is situated about half a mile to the west of the village of Bawgyo in the Thibaw State ; its geographical position is about 97° 15′ east longitude and 22 °35′ north latitude. A regular well has been dug by the villagers, which is well lined with timber, and from which the brine is drawn. I have been told that there was formerly a second well, which, however, yielded so large a quantity of brine that the villagers were unable to work it and therefore filled it in again."

The villagers state that during the rainy season each cauldron produces two and a half viss and in the hot weather four viss of salt in the day. Analysis of the brine gives the following result—

Sodium chloride	60·30
Sodium sulphate	34·64
Calcium sulphate	1·00
Magnesium sulphate	0·86
Undetermined (moisture, organic matter, &c).	3·30
Total ...	100·10

The Maw Hkeo brine is therefore, according to Dr. Noetling, "the richest known in Burma."

The great fault of the salt is that it has a bitter taste, which hinders its sale where other salt can be procured. This bitterness appears to be due to the sodium sulphate, which, seemingly, is increased in quantity by the method of manufacture, as shown by the analysis of a sample of salt sold in the bazaar:—

Sodium chloride (salt)	50·14
Sodium sulphate	42·33
Calcium sulphate	0·63
Magnesium sulphate	A trace
Undetermined (moisture, &c.)	6·90
Total ...	100·00

The process of manufacture is very simple. Every fifth day the brine is drawn from the well and poured into large wooden troughs consisting of a log rudely hollowed out. From these the brine is poured into cauldrons and boiled to evaporation. There are usually two cauldrons to each furnace, and these furnaces are simple constructions of brick and mud with an opening in front for the fire and behind to let out the smoke. The salt is sold as it comes out of the cauldrons. If the salt were manufactured according to the European method, that is to say, by leaving the greater part of the evaporation to be done by the sun, and only boiling brine of a high percentage of salt, Dr. Noetling is of opinion that the amount of sodium sulphate would be reduced and the bitter taste consequently lost. This would moreover materially reduce the cost of production. The Chinese system followed at Paiyenching and other places in Ssu-ch'uan might also be effective. These cone-shaped pans of iron are fitted into mud furnaces; instead of boiling the brine, ladles full are poured into the pan after it has been heated. These bubble up and evaporate, leaving a saline deposit on the pan. Thus a layer of about four inches thick is gradually formed corresponding to the shape of the pan, and the salt is carried about and sold in this hollow cone shape.

A good deal of the salt is sold in the Shan States in parts where Mandalay salt is too expensive and where Yünnan block salt does not penetrate. It appears that there is abundance of brine to justify the starting of a manufactory on a large scale. Dr. Noetling thinks that the yield may be estimated at two thousand gallons in the twenty-four hours. The opening of the railway may therefore make the salt-well of some importance.

Iron.

Iron is found in many parts of the hills, but is so far only worked by inhabitants of the country. Mr. G. C. B. Stirling gives the following account, which may be considered as typical of the Shan method of mining.

"Iron ore is extracted from a hill called the Loi Nam Lin in the North Pang Lông circle of Lai Hka. There are three shafts on the north side of the hill, and on a ridge at a little distance are a number of shallow workings, from which most of the ore now extracted is obtained. There is another shaft on the south face of the hill, but it has not been worked for some years; unfortunately the miners were absent on the day the place was visited, and a descent could not be made, but the three northern shafts are said to be of considerable depth. All are very narrow. Formerly, before the devastation of the Lai Hka State, men used to come here from the neighbouring villages, bringing one or more pack-bullocks. The ore mined by them was placed on the bullocks, taken to the smelter, and bought by him at eight annas per load. Work is now (1890), however, only carried on in a small way, and the following is the present practice.

"Each furnace has two workers, the smelter and his man. The former goes himself and mines the ore during the day, usually returning when he has filled two cooly-baskets (*i.e.*, what he can himself carry), this being as much as can be worked at one smelting. The latter's daytime work is to make sufficient charcoal for smelting the above. This he does from pine-wood, which is abundant.

"The furnace is made of earth and has two openings. In the lower the charcoal is placed and banked up so as to keep in the heat. The ore having been broken up and pounded till it is as fine as gravel is dropped into the furnace, a handful at a time, through the upper opening, charcoal being put in with it. A blast is obtained by means of bamboo bellows of the kind seen in the ordinary Burmese or Shan smithy. The smelting is begun about two in the morning and is finished by sunrise. The piece of metal obtained (called *kaung*), on being taken from the furnace, is cleft almost in two, so as to admit of its being carried on a bamboo. The quantity of ore which yields one of these *kaungs* varies of course according to its quality. In an experimental smelting carried out in an extemporised furnace fifty pounds weight of ore yielded a piece of metal weighing ten pounds, the smelting being completed in less than four hours.

"If the smelter works constantly and at his usual rate, he has four *kaungs* of metal at the end of the fourth day. On the fifth day he and his man take these to the bazaar, where they are disposed of at once (a ready demand

being found for all he can turn out) and the rest of the day is usually kept as a holiday. The price per *kaung* ranges from six annas to one rupee, eight to ten annas being perhaps the average. There are now two furnaces at Nam Lin village, two at Nam Maw Ka, one at Nang Hu, and five at Lin Lôn.

"The metal is bought by smiths from the neighbouring villages and from the adjoining Pawng Seng circle of Möng Nai. A certain quantity is taken by traders to Wan Pen, in Möng Nai State, where plough-shares are made; but with this exception it is all worked in the neighbourhood of the mines, and the manufactured articles sold at the local bazaars, that of Pang Lông being the largest and most frequented by traders who come for ironwork.

"The smiths have as a rule from three to six men, and having bought the metal from the smelter, like him, work hard for four days, and on the fifth go to the bazaar to sell the manufactured articles and to get a fresh supply of metal. The *kaung* is re-heated in the smithy and beaten out into a flat rod, which is cut off into lengths of a size suitable for the working of the article intended to be made; six men are required for this process,—the smith (who holds and turns the *kaung*), a man to work the bellows, and four to beat out the hot metal. A smith with less than five men is assisted by those of a neighbouring smith and usually pays for their services with small pieces of metal. Charcoal is bought at the rate of from two annas to three annas per cooly-load.

"The following are the implements usually manufactured and the wholesale prices of each :—

	For ten.						
	Rs.	A.	P.		Rs.	A.	P.
Mattocks (*pauktu*)	4	0	0	to	5	0	0
Axes (*pauksein*)	3	0	0	to	4	0	0
Axes (larger and heavier)	7	0	0		......		
Tripods (*thanbokanauk*)	2	0	0		......		
Spades (*dhaywin*)	1	4	0	to	1	8	0
Dhamas (long)	2	8	0	to	3	0	0
Dhamas (short and heavy)	4	8	0		......		
Dhakauk	1	8	0		......		
Scissors	1	8	0		......		
Tongs (*minyat*)	1	0	0	to	1	8	0

"The iron-work of Pang Lông is widely sold throughout the Eastern Shan States and is even taken to Mè Hawng Hsawn and Chieng Mai, but the industry is comparatively small at present. Smelters and smiths work very hard, and neither seem able to make a livelihood by their trade, all cultivating fields or *taungyas* as well as manufacturing ironwork. Very much higher prices than those given above obtain in most of the large bazaars throughout the Shan States, and the profit made by traders who buy in Pang Lông and retail the implements manufactured there must be considerable. As to the extent of the iron-bearing stratum and the quality of the ore the opinion of an expert only would be of any practical value."

Such mining settlements are scattered about in various parts of the hills. The whole village of Hpang Lat, south of Loi Lön in the Wa States, is made up of blacksmiths. The three circles of Hsam Tao, on the Kēng Tūng-Kēng Hūng border, have been noted since the times of Garnier for manufacturing guns (see under

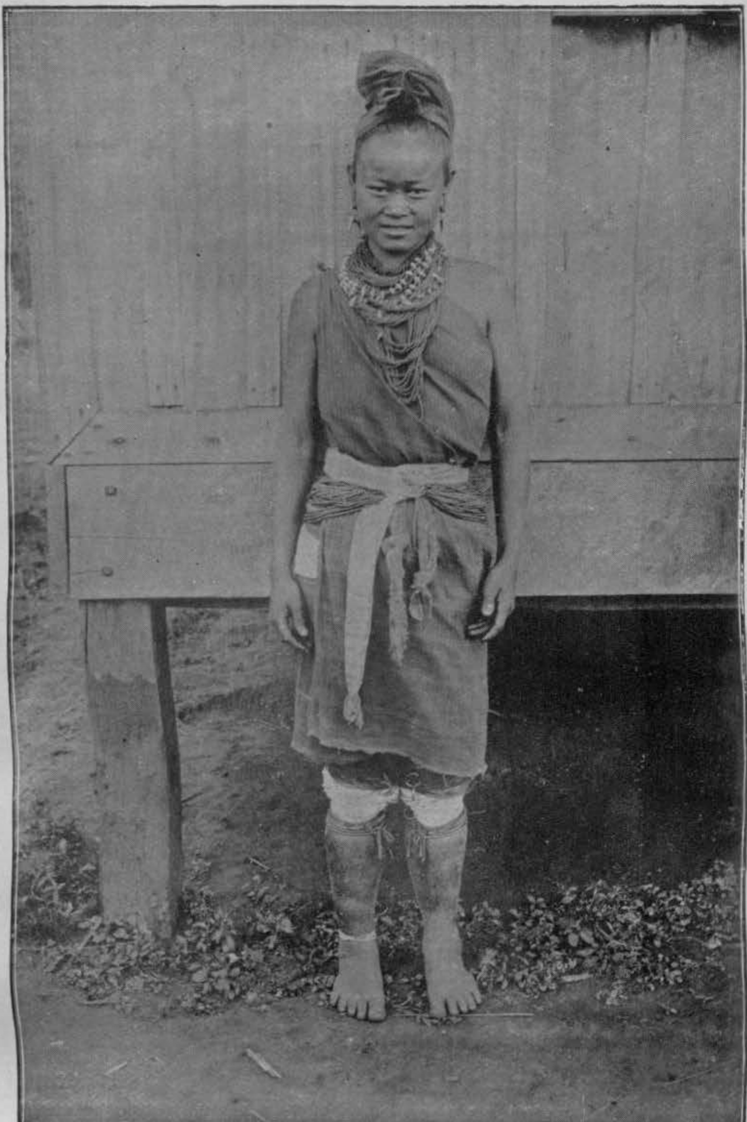


Photo-Block

Survey of India Offices, Calcutta, 1899.

SAWKU KAREN GIRL.

Wan Pyu). In the Northern Shan States parties of Nga-chang, or Maingthas as the Burmese call them, come down year after year to do blacksmith work in the cold season, and go back to their own country before the rains set in. The Khunnawngs (*v. sub. voc.* Kachins) are also noted workers in iron.

Lead.

The Maw Sön (Bawzaing) silver and lead mines are situated in the Myelat district of the Southern Shan States. They are situated about one mile north-east of the village of Maw Sön, on the slope of a small hill, and extend over about one hundred yards square. The ore is usually found in small quantities at a depth of about ten feet, but the shafts descend to about three hundred feet before the miners begin to follow up any veins. The ore varies in quality, yielding from one to five rupees weight of silver per basket of about 365 lbs. The tools used in working the ore are a small hand-pick, a mallet, and a cold steel chisel. Two men take it in turn to pick at the rock, while others carry the ore to the surface. The process of extracting the metals from the ore is carried on close to the village of Maw Sön, independently of the miners, who sell the rough ore at the pit's mouth. The furnaces used can each reduce about five baskets (1,825 lbs.) of ore daily. Silver is sold at fourteen rupees per quarter pound of weight and the rolled lead at from one and a half to two rupees the hundred viss (365 lbs). In Burmese times the main profits were derived from the sale of lead, but after the annexation of Upper Burma the industry dwindled, as the miners could find no market for their lead in consequence of the prohibition of its export into Burma. In 1890 a Chinaman named Saw Hoe Shoke received permission to buy and export the lead, mostly to the Straits Settlements. He subsequently obtained a lease of the mines on payment to Government of a royalty of three rupees per hundred viss. The work has been carried on steadily, but has not reached very large dimensions, probably because the demand is not very great. Not far from Maw Sön is the Kyauktat district of Yawng Hwe State, where operations of the same kind used to be conducted on an even larger scale. In the disturbances preceding the annexation, however, Kyauktat, then a petty State of the Myelat, was so absolutely burnt out that hardly a house remained in the whole tract. Population has since come back, but the old mines have so far remained unworked. Mr. Fedden of the Geological Survey of India, gave the following account of it in January 1865:—

"Kyauktat is a large town, or rather overgrown village, and one of the most populous in the State. [There was not one solitary house left in January 1887.] Here there are some smelting works of argentiferous galena that occurs in the limestones and calcareous deposits of this district,

but it was impossible to ascertain from the natives the precise localities where it was got. The ore is purchased by the smelter at the rate of two to three and a half *ticals* silver (*baw*) per basket measure (about a bushel) of ore, uncleaned, often containing a good deal of rubbish apparently. It must be rich, however, in silver, or this metal could not be extracted by the simple and rude method practised.

"The larger lumps being broken up, the ore is first put into a small cupola or blast-furnace, together with charcoal and a proportion of broken clay. These cupolas are of clay and built upon the ground, two and a half or three feet in height and fourteen to sixteen inches in diameter. Women are employed, standing on raised platforms, to pump the blast, generally two to each furnace. As the sulphur is driven off, the reduced metal accumulates at the bottom of the furnace, and is ladled or rather scraped out from below (the scoriae being removed) into moulds in the ground, where it assumes the form of massive lenticular ingots. When cool and set these ingots are removed to the refining shed and put into small reverberatory furnaces, with the fuel, large pieces of charcoal, supported on fire clay bars above the metal, which is thus kept in a fused state for about twenty-four hours; during this time, as the lead becomes oxidized, it is removed by gently revolving over the surface an iron rod around which the lead in the form of litharge solidifies, and as this process is continued it accumulates in a number of coatings or layers, one upon the other. When all the lead has been thus removed, the silver residue is taken out as a button or plate on an iron ladle. The rollers of litharge have of course to be again reduced, in order to convert them into metallic lead, and there must be a considerable loss of the metal during this, as well as the former process. The plate of silver is considered pure, and is not used in this state as currency, but is sold to the silversmiths and jewellers, who alloy it with copper and lead in various proportions.

"The smelter at Kyauktat also buys up the argentiferous and cupiferous lead residue from the silversmiths' forges and extracts the several metals in his furnaces" (*Journal of the Salween Surveying Expedition*, 1864-65).

Similar mines were also formerly worked at Bawdwin-gyi in the State of Tawng Peng-Loi Lông. These are situated in a narrow valley, ten miles south-east of the village of Kat Lwi, and five to six miles north of Pang Yung. The valley runs south-east and north-west and is watered by small streams which run south-east to the Nam Hkông, a tributary of the Nam Tu. It is little more than a gorge and does not exceed two hundred yards in width anywhere, and sometimes is barely one hundred. The hills on each side are absolutely bare and desolate. The first traces of former workings are met with about four and a half miles from the head of the valley, and for a distance of two miles on each side of the stream the steep and bare hill-sides are completely honey-combed with shafts. In most cases a horizontal boring appears to have been first made, after which the vein of ore was followed up in various directions. In some cases an ascending and descending shaft were sunk at the same spot, in others borings were made to the right and left. Quar-

rying was also tried, and in some places the hill-side has been cut away into a perpendicular cliff. It is said that two thousand Chinamen were engaged in the mines at one time, and the ruins of stone houses extend for miles along the valley. The stream is embanked with faced stones and the remains of a stone-paved causeway are distinctly visible. This ran along the bottom of the valley and crossed and re-crossed the stream by solid stone bridges, all of which are standing and in perfect repair, though it is said the Chinese left the place in 1855. Two of the bridges are crowned by steps and the third is flattened at the top. The span averages twenty feet and the width six. On the hill-side there is a ruined *joss*-house, perched high above the stream and approached by a flight of stone steps.

Several of the largest tunnels remain in good repair. The entrance of one measured six feet by four and was made thus wide to admit of the passage of mules. On either side of the entrance is a brick niche for images of the Buddha. The larger shafts can still be entered for some hundred feet, but are then blocked by water which has percolated through. The majority of the tunnels, however, are only large enough to admit of the passage of a man's body, and some which are below the level of the stream have been completely flooded. The whole in fact very much resembles a gigantic rabbit warren.

Silver, lead, and copper were extracted from the mines, the two latter only in small quantities, as the silver repaid the Chinamen amply. The veins of silver varied from a few inches in thickness to about two feet. The process of extracting the silver seems to have been kept a secret. The ore seems to have been crushed and washed and then placed in a closed charcoal furnace. Long rows of beehive-shaped smelting ovens still exist The lead was first drawn off at a comparatively low temperature. The oven was then heated to a much higher temperature and for a considerably longer time and on the fifth day the silver was found at the bottom of the crucible. According to another account, the washed and pounded ore was placed in the furnace for five days. A layer of clay intervened between the ore and the charcoal and through a runlet in this the lead fell to a receptacle below, from which it was drawn off and made way for the silver.

Most of the lead ore seems to have contained some proportion of silver, apparently one-tenth, and the original workers threw this away as useless. Traces of copper are visible everywhere, and one or two of the mines were worked for this alone.

The silver was sold for one rupee six annas for the weight of a rupee and lead for four annas the viss. Copper varied from eight annas

to three rupees the viss. The mines were worked by permission of the King of Burma, and his tribute was sixty viss of silver in the year. Probably most of the silver is worked out, but the reason given for the departure of the Chinamen is internal dissension, and the unsettled state of the country which succeeded on the migration southward of the Kachins. The valley is also very unhealthy, and the tombstones of many Chinamen stand on the hill-side on the left bank of the stream. After the Chinamen left King Mindôn is said to have sent an "army" to work the mines, and the project was continued by King Thibaw, but most of the men succumbed to the climate, and the lack of experience of the rest seem to have made the experiment anything but a paying one. The mines have never been examined by an expert and their inaccessibility is likely to prevent serious work being undertaken.

Silver is also found in large quantities in mines in the Wa country east of Möng Hka, but the mines have not been visited by any European.

A considerable quantity of lead is extracted, as required locally, from pits at Kat Maw, near Ta Küt in the State of Mang Lôn east of the Salween.

Gold.

Gold is found in most of the rivers in Upper Burma, but nowhere as yet in quantities sufficient to pay for steady work. Sand-washing is carried on fitfully in many parts of the country, especially in Katha, in the nullahs of the *indaing* jungles, Ruby Mines district, and in several streams of the Ye-u subdivision, as well as in many parts of the Shan States. Dr. Watt in his "Review of Mineral Production in India for 1896" says: "The industry of gold-washing is for the most part spasmodic, "a sort of by-product with certain communities." When other industries fail and are depressed, the people of many districts take to washing the sands of their streams, from which they can always obtain at least a livelihood. In Burma the average earnings are calculated to be about three annas a day. But nowhere can gold-washing be carried on right through the year, so that the average for working days must be higher.

There is only one gold mine so far in Burma. A tract of country a quarter of a mile square at Chaukpazat in the Mawnaing circle, Mawnaing township of the Katha district, was leased to Mr. Wright for a term of thirty years with effect from 1st April 1895, at a yearly rental of one hundred and sixty rupees and a royalty of five per cent. on the saleable value of all gold obtained from the mines opened in the tract. The concession was later transferred to a company.

The mine or quartz-reef is situated among low hills and is on the side of a steep slope. It is fully exposed to view and is about eighty yards long by eighteen to twenty feet deep. A mill has been set up at a distance of about a mile from the mine with all necessary crushing apparatus and machinery. Several shafts have been sunk, and work is being carried on with satisfactory results. The rates of wages paid are much higher than those which prevail in India. The total yield of gold in 1896-97 was 893·25 oz. as against 273·53 oz. in the preceding year. A large quantity of quartz awaits treatment by chemical processes which are shortly to be introduced.

For years Burmans and Shans have cherished the story that gold in dust, nuggets, and veins was to be found in the Nam Yang Leng, the Shwe Thamin *chaung* of the Burmese, which runs into the Nam Hka through the Wa Pĕt Ken. A visit to the Maw Hkam, the "Gold mine," by a party in 1897—the first strangers that ever reached the spot—failed, however, to discover any traces of gold. Gold is, however, certainly washed from the sands of the neighbouring streams, and it is possible that the deposits are richer than they are elsewhere. In any case gold dust is nowhere a rarity in the Shan States, and washing is regularly carried on at many points along the Salween.

Miscellaneous minerals.

Alabaster.

Alabaster is mined from the quarries at Sagyin, north of Mandalay; these quarries supply nearly the whole of Upper Burma with the alabaster from which images of Gaudama Buddha are made. Seventy mining leases were taken out in 1896-97.

Mica.

Operations for the extraction of mica were started in 1894-95 in the Twin-ngè township of the Ruby Mines district, and the outturn is increasing and promises to be profitable. Mica is also found in the Minbu district, but hitherto has not been worked.

Steatite.

Steatite mines exist in the Minbu district; they are quarries rather than mines, and are chiefly in the *Yomas*, at a spot about two marches west of the village of Pa-aing in the Sidôktaya township. In 1896-97 the production was twelve tons, valued at six thousand rupees. The steatite is excavated in blocks and is brought down to Pa-aing on pack-bullocks. From Pa-aing it is brought in boats to the village of Ingôn on the Môn river, and thence in carts to Salin. At Salin the blocks are sawn into slabs, which are in turn converted into pencils, which are used for writing in Burmese *parabaiks*.

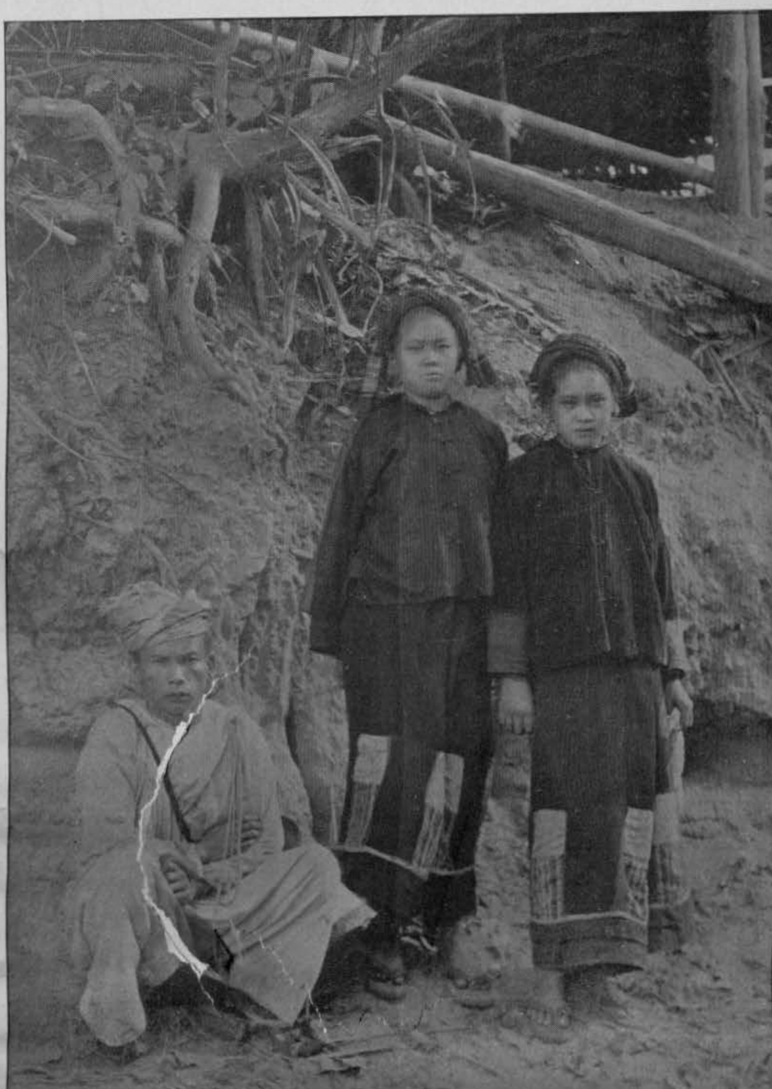


Photo.-Block. Survey of India Offices, Calcutta, 1899.

SHAN WOMEN OF NAM KHAM IN SHAN CHINESE DRESS.

CHAPTER XIII.

FOREST AND OTHER VEGETATION.

FOR the general character of the forests of Burma—evergreen and deciduous, swamp and dry, bamboo forests and savannahs—reference may be made to the chapter in the *British Burma Gazetteer*. Notwithstanding that most of the Upper Burma forests were leased to British companies or to British subjects, it was at least two years after the annexation before any real forest work could be done. Revenue was collected for a short time under the general orders issued by the Chief Commissioner on the 12th April 1886, and given the force of law by the Upper Burma Laws Act. From the 15th August 1887, the Upper Burma Forest Regulation came into force and was supplemented by rules relating to reserved forests, the disposal of timber and forest produce, the control of timber in transit, the collection and disposal of drift, stranded, and other timber, the impositions of penalties for forest offences and the powers to be exercised by forest officers. Notifications were also issued declaring five species of trees reserved in addition to teak, proclaiming stations for the collection of revenue, fixing the local duties leviable at revenue stations on timber and other forest produce. These rules and notifications have undergone little modification since.

Under the Burmese Government, owing to the keen competition for licenses to work for export, the nominal income derived from the forests amounted to about Rs. 14,00,000 a year, of which about Rs. 13,00,000 were payable by licensees, and a sum estimated at Rs. 1,00,000 was obtained from local duties. It is highly probable, however, that the realization of the rents that went to make up the Rs. 13,00,000 could not have continued.

The revenue in 1886-87 was Rs. 1,08,070, of which Rs. 1,00,000 were realized from licensees and the balance from the sale of Royal timber. During 1887-88 the gross revenue was Rs. 2,96,870, of which Rs. 1,12,000 were realized from licensees and the balance from local sources.

The following is a list of the different forests burdened by rights to work for export to Lower Burma on payment, granted by the King's Government, the names of the licensees, and the dates of expiry of the different leases :—

Name of licensee.	Name of forest.	Year of the expiration of lease.	Remarks.
		Years.	
Messrs. The Bombay-Burma Trading Corporation, Limited.	Pyinmana forests ...	1896	With period of grace within which to extract felled and neaped timber.
	Chindwin forests ...	1899	
	Mu forests ...	1899	
	Taungdwingyi forests ...	1899	
	Theingôn forests ...	1899	
	Yaw forests ...	1899	
	Pyaungshu forests ...	1903	
	Malun-Myedè ...	1890	
Executors of Mr. Walker and U Kawi.	Myittha-Panlaung (Hlaingdet) forests.	1889	
Maung Mun Taw and Maung Bauk.	Forests drained by the Irrawaddy on both banks from Mandalay to Bhamo.	1895	
Ko Tu	Mogaung forests ...	1893	

At the outset forest work was beset with great difficulties. To the Forest Officers the country was practically unknown, and the disturbed state of parts of the province rendered it impossible for many of the forests to be visited and inspected. Moreover, where the people were settling down it was not desirable to attempt too suddenly to enforce the Forest Regulation and Rules.

The negotiations with the different lessees under the Burmese Government resulted in their accepting licenses permitting them to work as contractors for the British Government the various forests of which they held leases from the King of Burma. The agreements made provided for the extraction of a minimum quantity of timber and for the payment of a royalty on all timber extracted. It was further provided that the forests should be subject to the Forest Regulation and Rules, and that all girdling should be carried on by, or under the direction of, the officers of the Forest Department. The people of the country were allowed to retain their ancient privilege of removing from the forests dead and old girdled timber for their private use. In order to secure the observance of scientific principles of forestry, however, girdling operations were kept exclusively under the control of the Forest Department, so as to prevent the exhaustion or over-working of the teak-producing tracts. Until the annexation, the forests were worked on no principle except that of extracting the greatest possible quantity of timber, and no provision whatever was made for the future. Moreover, natural

reproduction was in a most unsatisfactory state everywhere. Not only were the younger classes of trees ill-represented, but seedlings were scarcely to be found. This was due to various causes. In some parts, as in Pyinmana, it arose from the removal of all the marketable trees. This resulted in a dense undergrowth which prevented all reproduction and at the same time helped the destructiveness and intensity of the annual fires. But it was the forest fires which caused most injury, for these destroyed not only the young plants, but the seeds that had fallen. These fires usually started with the burning of jungle growth round villages and police-guards, or sometimes with the foresters of the lessees, who set fire to the forest as a protective measure round spots where their logs were collected in quantities.

The principal work of the Forest Department until 1891 was therefore the examining of forests with a view to their reservation and protection. The general conclusion drawn was that the wasteful working of the years that preceded the annexation of Upper Burma had to a great extent depleted the forests of teak and that the duties of the Forest Department in many teak-growing areas will be for many years to come confined to fostering its reproduction.

In the season 1891-92 an area of 1,024 square miles of forests was notified as reserved, and at the end of the year the total area of reserved forests in Upper Burma amounted to 1,059 square miles, 35 square miles having been reserved in the Ruby Mines in the previous year. Of the forests reserved in 1891-92, 785 square miles consisted of forests in the Pyinmana division, one of the most valuable teak-producing areas in Burma.

The total area of "protected" forests at the end of 1891-92 was 16,461 against 16,014 square miles at the end of 1890-91. The area has gone on rapidly increasing since then. On the 30th June 1894 the total area of reserved forests in Upper Burma was 3,977 square miles, of which 2,176 were in the Eastern and 1,801 square miles in the Western circle. At the same time the "protected" forests in the Western circle, including areas set down for, and in a more or less advanced stage towards, reservation covered 14,448 square miles, and in the Eastern circle 9,413 square miles.

On the 30th June 1896 the reserved area amounted to 5,438 square miles, of which 2,705 square miles are in the Eastern circle and 2,733 in the Western circle. At the close of the year proposals for settlement of 882 square miles and 1,246 square miles in the Eastern and Western circles respectively were under preparation or awaiting disposal. Several tracts of valuable forests till then unvisited were examined by local officers. "Protected" forests

properly so called do not exist in Burma and therefore in 1896 the forests were classified as either "Reserved" or "Unclassed." The unclassed at the end of that year amounted to 9,200 square miles in the Eastern circle and 13,689 in the Western circle.

The question of fire-protection has been much discussed and opinions vary greatly, but it seems generally agreed that, though reproduction of teak is better in unprotected than in protected areas, yet that, on the other hand, forest fires do immense damage to mature and growing teak, and that the damage to young teak growths resulting from fire cannot be prevented by other means than fire-protection, while any unfavourable effects of fire-protection can be remedied by other means, such as improvement fellings, which prevent the closing in of the canopy.

The quantities of teak and other timber extracted from the Upper Burma forests during the year 1895-96 were—

——	Teak.	Other kinds.	Total.
	C. ft.	C. ft.	C. ft.
By Government agency	359,726	14,417	374,143
By purchasers and under trade permits.	9,007,978	6,464,882	15,472,860
Under free permits	269,276	22,612	291,888
By lease-holders of forests ...	...	618,559	618,559
Total for 1895-96 ...	9,636,980	7,120,470	16,757,450
Total for 1894-95 ...	9,549,059	6,091,047	15,640,106
Increase	87,921	1,029,423	1,117,344

In Upper Burma 2,301 logs containing 2,275 tons of teak were brought out of the forests of the Bhamo, Katha, and Ruby Mines divisions, against 1,929 logs containing 1,830 tons in the year 1894-95. They yielded a profit on sale of Rs. 21-15-7 per ton. Besides this timber 7,139 logs containing 3,246 tons of "rejected" teak were either made over to contractors on payment of the local duty, or were sold on the half-profits principle, and yielded a net revenue of Rs. 27,778 against Rs. 11,594 from the same source in 1894-95. In the Western circle 224 logs of teak were extracted departmentally from the Minbu and Taungdwingyi forests and 493 logs of drift teak and 39 logs of other kinds of drift timber lapsed to Government.

The following statement shows the quantity of timber extracted by the Bombay-Burma Trading Corporation from the various forests held by them under lease :—

Lessees.	Circle.	Division.	Forest.	1894-95.		1895-96.		Increase.	Decrease.
				Tons.	Revenue.	Tons.	Revenue.		
					Rs.		Rs.	Rs.	Rs.
Messrs. The Bombay-Burma Trading Corporation, Limited.	Eastern ...	Mandalay ...	Pyaungshu ...	6,261	58,942	3,967	37,097	...	21,845
		Mu	Mu ...	5,776	53,076	7,076	64,764	11,688	...
		Pyinmana ...	......	91,220	8,31,128	80,528	7,49,065	...	82,063
	Western ...	Upper Chindwin ...	Chindwin ...	14,206	2,84,966	17,736	4,63,491	1,78,525	...
		Lower Chindwin ...		11,057		17,978			
		Yaw (Myittha) ...		4,117		12,567			
		Yaw	......	544		1,152			

The increase over the preceding year was almost entirely caused by the increased outturn from the Chindwin forest, due to favourable floods. The decrease in the yield of the Pyinmana forests was due chiefly to the rejection by the lessees of 11,079 logs extracted by them.

Messrs. Darwood and Company extracted 4,124 tons from the Shweli and Hlaingdet forests, and Hadji Mahomed Hady 860 tons from the Bhamo forests, from which Government derived a revenue of Rs. 72,997 as compared with Rs. 1,93,316 on 14,996 tons in 1894-95. The estimated outturn of teak from the forests of the Southern Shan States was 12,357 tons. Trade licenses were granted in the Eastern circle for 10,890 tons of teak, 436 tons of *padauk*, and 43,812 tons of other varieties. Free licenses were granted for an estimated quantity of 3,283 tons of teak, against 3,019 tons of teak in 1894-95. In the Western circle trade licenses were issued for 6,250 teak and 128 *padauk* trees, and free licenses for 5,745 teak trees.

The following table gives a comparative statement of the quantities of teak exported from Moulmein and Rangoon in each of the past five years :—

Year.	From Moulmein.		From Rangoon.		Total.		
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Average value per ton.
		Rs.		Rs.		Rs.	Rs.
1891-92 ...	62,320	41,88,267	99,647	75,13,397	161,967	1,77,01,664	72·2
1892-93 ...	106,850	72,57,412	109,336	91,85,043	216,186	1,64,42,455	76·06
1893-94 ...	85,722	60,39,428	85,623	65,78,973	171,345	1,26,18,401	73·64
1894-95 ...	84,456	58,68,527	106,810	83,34,657	191,266	1,42,03,184	74·26
1895-96 ...	84,363	58,44,214	120,494	94,03,044	204,857	1,52,47,258	74·43

Shan States forests.

In Burmese times the right of the sovereign power to the forests in the Shan States was always asserted and maintained. Some forests were leased to the Bombay-Burma Trading Corporation, others were left in the hands of the *Sawbwas*, who were permitted to work them on payment of tribute and royalty, which was variously assessed in various States. The commonest form of assessment was the levy of a fixed sum on each elephant used in forest work. Until 1890 no action was taken to obtain for Government its share in the income derived from working forests which had remained in the hands

of *Sawbwas*. In that year the forests were partly examined by a Forest Officer and, pending his recommendations, the *Sawbwas* of Möng Pan and Mawk Mai and the Myoza of Hsa Htung, whose States contain the principal forests, were formally authorized to work the forests in their States on payment of a royalty of Rs. 200 a year on each elephant used in forest work, and on condition that they complied with Rules 8 to 14 of the Upper Burma Forest Rules, which regulate the manner in which trees may be girdled.

The report of the Forest Officer deputed to examine the States showed that some of the forests were much richer than others, that all had been wastefully worked, and that the *Sawbwas* had entered into various improvident agreements with speculators, mostly from Moulmein, by which they pledged the forest resources of their States for comparatively small sums. On a consideration of the Forest Officer's report it was decided that the time was not come for undertaking the administration of the forests by Government agency. It was further made clear that the royalty of Rs. 200 per elephant which had been fixed in 1890 was too high, although some States could pay more than others. The *Sawbwas* were accordingly permitted to continue the working of their forests, and the amount of royalty to be paid by each Chief was fixed on a calculation of the profit derived from them. The sums thus fixed were Rs. 50 per elephant for Mawk Mai, and Rs. 100 for Möng Pan and Hsa Htung. It was further ordered that the royalty should be increased by 50 per cent. in the case of elephants employed in connection with saw-pits, which yield large profits. Finally it was decided that Government did not recognize the validity of agreements made by the *Sawbwas* with speculators, since they alienated rights in forests which belong to Government and of which the *Sawbwas* have no authority to dispose.

The practice of calculating the royalty on the number of elephants employed in working the forests was given up in 1893 and fixed sums were prescribed instead, on a consideration of the profits derived by the *Sawbwas*. The sums ranged from Rs. 10,000 yearly in the case of Möng Nai and Möng Pan to Rs. 1,000 in the case of Kēng Hkam.

Later examination of the forests along the Salween has proved that they have been much overworked in the past twenty or thirty years, and in many cases all available dead timber has been completely worked out. Many of the forests have been already closed entirely to the working of teak, and this will shortly be done with all, to enable them to recover from their present state of exhaustion.

Details as to the character of the Shan States forests and the various timbers will be found in the extracts from the reports of the late Mr. Aplin and of Mr. A. E. Ross, given later in the chapter.

The quantity of teak timber imported by the Salween into Moulmein was, in 1895-96, 58,941 tons, against 75,831 tons in 1894-95. At Kado 43,757 drift logs were received, against 37,651 in the preceding year. The quantities of teak brought down by the Irrawaddy and Sittang were 43,275 logs and 77,777 logs respectively, against 30,159 and 85,520 in the previous year.

Cutch.

The principal cutch areas are in the Minbu, Mu, Pyinmana, and Yaw divisions. In many parts the cutch has been entirely or almost entirely worked out and, though the tree is still plentiful, it runs great danger of being exterminated. The protection of cutch offers peculiar difficulties. The most effective way of regulating extraction is no doubt to reserve cutch-bearing areas, but reservation is not always possible. It cannot be carried out in tracts where there is a considerable cutch-boiling population. To reserve cutch areas in these localities would be to deprive a large number of people of their means of livelihood. Accordingly the policy which it has been decided to pursue is to reserve cutch areas which are as yet unworked, and are not situated in populated tracts, and to carefully regulate the cutch industry in localities where reservation cannot be carried out. The object which has to be kept in view is to prevent the felling of undersized trees. This has always been forbidden by the rules, but difficulty has been experienced in enforcing the law because evidence can rarely be obtained to bring home cases of illegal felling to particular individuals. In order to meet this difficulty it has been decided to insist on the joint responsibility of cutch-boilers for the felling of under-sized trees. Cutch-boiling is carried on in small camps of a few workers, who fell trees in the immediate vicinity and drag them to the camp. It has now been made a condition of all licenses that, if an under-sized tree is found in a cutch camp, all the licenses held in that camp shall be liable to be cancelled. Moreover, licenses are now issued to actual workers only, and not in large numbers to individual speculators.

The result has been a great falling off in the production of cutch, but this was inevitable if the forests were not to be exterminated. The difficulty is increased by the amount of illicit cutch-boiling which is carried on under the pretence of working on non-State or *bobabaing* land. The enquiry into the tenures on which land is held in Upper Burma is still far from complete, but the measures taken will probably save the cutch tree from the extinction which has been its fate in Lower Burma.

Latterly there has been a considerable increase in the demand for *pyinkado* timber, chiefly for railway sleepers, and it has been necessary to take measures for the preservation of the supplies of this wood. It was considered inexpedient to declare *pyinkado* a reserved tree in Burma generally, but a condition has been inserted in the form of a trade license for firewood prohibiting the felling of any *pyinkado* tree for fuel. The felling of any *pyinkado* tree less than 6 feet 9 inches in girth at 1 foot above the ground has been prohibited from the beginning of 1898.

Rubber.

Caoutchouc has been discovered in the Minbu forests, but the quantity of trees is not great, and the great quantity of rubber comes from the Hu Kawng valley and from other parts beyond the administrative boundary. Mr. O'Bryen was the first to examine these forests, in 1891, and reported that the *Ficus elastica* is said to extend from the Indawgyi lake, in latitude 25° 15′, northwards as far as Hkamti Lông and westwards into Assam, but does not grow east of the Irrawaddy. In the forests examined the rubber trees were never found in compact blocks, but scattered either singly or in groups in dense evergreen forest, and it was ascertained from the Kachins that all the rubber forests are of a similar description. Countings made in the forests showed a general average of nine trees in one hundred acres, but on the Jade Mines road from Nam Yong to Nam Nu-yang as many as fifty trees were found on the hundred acres. The more accessible forests have been overworked, and many trees have been killed by tapping both aerial and underground roots, but some of the Kachin headmen seem to have established a system of rotation which gives them a fixed yield every year. A considerable area of the rubber forests appears to be so remote as to be practically unworkable. Further information will be found in the parts of Mr. H. N. Thompson's report quoted below.

For a description of general forest produce the chapter in the *British Burma Gazetteer* of 1880 will suffice. The information there given is here a little amplified by quotations from the reports on the Shan Hills and the Hu Kawng valley forests by Messrs. Aplin, Ross, Thompson, and Jackson.

Forest administration.

Until the 1st April 1892 there was only one Upper Burma Forest Circle. This was then divided into two, the Eastern and the Western Circles, each under the charge of a Conservator with headquarters at Mandalay. The Eastern circle was composed of the Mandalay, Mu, Pyinmana, Shan States, Bhamo, and Katha divisions; and the Western circle of the Upper Chindwin, Lower Chindwin, Yaw, and Minbu

divisions. The number of divisions and subdivisions has gradually increased until at the end of 1897 they were as follows :—

Eastern Circle, with headquarters at Mandalay—

Division.	Subdivision.
Bhamo ... ... (*Bhamo*).	Shwegu. (*Bhamo*).
Katha ... ... (*Katha*).	Myadaung. (*Tigyaing*).
Ruby Mines ... ... (*Katha*).	Mogôk. (*Mogôk*).
	Möng Mit. (*Mogôk*).
Mandalay ... ... (*Mandalay*).	Kyauksè. (*Kyauksè*).
	Revenue. (*Mandalay*).
	Myitngè. (*Maymyo*).
Pyinmana ... ... (*Pyinmana*).	Pyinmana (*Pyinmana*).
	Yamèthin. (*Yamèthin*).
Southern Shan States. (*Taunggyi*).	

Western Circle, with headquarters at Mandalay—

Division.	Subdivision.
Magwe. (*Taungdwingyi*).	
Minbu. (*Minbu*).	
Yaw ... ... (*Pakôkku*).	Gangaw. (*Gangaw*).
Mu. (*Shwebo*).	
Lower Chindwin ... ... (*Mônywa*).	Revenue. (*Alôn*).
Myittha. (*Mingin*).	
Upper Chindwin ... ... (*Kindat*).	Paungbyin. (*Homalin*).
	Revenue. (*Kindat*).

Surveys by triangulation and traverse and working plans have been carried on continuously, but are not complete, nor are the forests in either circle entirely demarcated. Experiments have been tried with mahogany trees and with the eucalyptus, but the former eventually all died out and, except at Maymyo, where the eucalyptus has firmly established itself, the various species of that tree have made no marked progress. The departmental orchards in the districts of Bhamo, the Ruby Mines, and Maymyo have not been very encouraging. That at Taunggyi seems to have met with greater success. Experiments with rhea grass gave no great encouragement. Almost all the experimental cultivation has been carried on in the Eastern circle.

Revised rules under the Upper Burma Forest Regulation were published in April 1893. The principal modifications made in the rules were as follows. The rules requiring licenses to be taken out for the extraction of unreserved timber for trade purposes was extended to the whole of Upper Burma; the form of cutch licenses was altered in order to provide for the sale of such licenses by auction and to provide additional security against illegal felling; and changes were made in the forms of licenses for felling reserved timber for the purpose of preventing wasteful working. Simultaneously with the publication of the revised rules, notifications were issued enhancing the royalty levied on timber of all kinds extracted for trade purposes in Upper Burma. The enhancement was made on a consideration of the value of timber, the condition of the local trade, and the necessity of securing to Government a fair share in the value of timber extracted.

The late Mr. Aplin, Deputy Conservator of Forests, gave the following account of the pines in the Shan States:—

Pine forests.

"There are two distinct species of pines which occur in the Shan States, namely:—

Pinus Kasya (Royle), the leaves of which are in bundles of three.

Pinus Merkusii (Jungh), the needles of which are in bundles of two.

"The *Pinus Kasya* grows at a much greater elevation than the *Pinus Merkusii*. Kurz states that *Pinus Kasya* occurs at from 3,000 to 7,000 feet of elevation, whilst *Pinus Merkusii* grows at elevations of from 500 to 2,500 feet. My own observations prove that the latter grows up to about 3,000 feet elevation in the Shan States.

"I find the following remarks in the *Indian Forester* for February 1888, paragraphs 63 to 65, which it will be interesting to quote here:

"'*Pinus Kasya*.—The resin of this pine is believed to be the most valuable in India and has attracted the special attention of Sir Joseph Hooker. Forests of this tree are estimated to cover about 270 square miles, of which 230 are in Assam, the remainder being in Burma. The small area in Burma

can, it is confidently believed, be largely extended and improved, nothing but fire conservancy being required to transform the hillsides into pure pine forests.

"'*Pinus Merkusii.*—This pine is only found in Burma, where it covers about 50 square miles in Thaungyin valley in Tenasserim circle. These forests are much more accessible than the *Kasya* pine tracts, and no difficulty is anticipated in extending them by the reservation of suitable tracts, as the population there is sparse and the tree can easily be propagated.'

"I have quoted these extracts as it is seen that no account has been taken of the pine forests which occur in the Shan States. These are probably very extensive and may cover many hundreds of square miles from the Karen-ni country (where they are known to occur) up to the Yünnan plateau in the north, and probably extend to and connect with those of Assam on the west. They are known also to occur in Siam beyond the Salween. With the conquest of Upper Burma we have certainly added very considerably to the area of our pine forests.

Pinus Merkusii.

"I proceed in the first place to treat of *Pinus Merkusii.* This species in the Shan States, as in the Thaungyin valley of Tenasserim, almost invariably grows in mixture with *in* (*Dipterocarpus tuberculatus*). On our march *Pinus Merkusii* was found in the following localities:—

(1) On both sides of Namhlut at an elevation of about 2,800 feet. For about 5 or 6 miles before arriving at Namhlut the forest consisted of a mixture of *in* and *Pinus Merkusii*, both of which attain there large dimensions, having very tall and straight stems. This forest continued for 7 or 8 miles along the road to Manglön (Lamaing), so that we passed some 13 or 14 miles through this forest.

(2) On the hills to the south-east of Mawk Mai (Maukmè), where it was as usual mixed with *in*, but it was nothing like so plentiful as in the forest previously mentioned.

(3) On the hills to the south-east of our camp at Sawa village.

(4) A few trees were found near Möng Pan (Maing Pan) and a few beyond Möng Pan on the road to the Salween.

Pinus Kasya.

"The *Pinus Kasya* had been first met with on the Myelat plateau at an elevation of about 4,000 feet. The Pwehla plateau lies west of the Nam Pilu valley. *Pinus Kasya* is found scattered in groups over this otherwise treeless expanse. On our march from, and return to, Fort Stedman, *Pinus Kasya* was met with in the following localities:—

(1) At and about Yedwingyi at 3,640 feet above the level of the sea.

(2) On the hills between Bampein and Möng Pawn (Maingpun).

(3) On the hills between Möng Pawn (Maingpun) and Hopông. The forests are here very extensive, although the trees are usually scattered over the area.

(4) A few trees were seen on the hills which constitute the western boundary of the Hopông plateau.

"There can be no doubt that the *Pinus Kasya* is extensively distributed on the higher plateaux and hills of the Shan States. A peculiarity about

it, so far as my observation goes, is that this species rarely occurs so as to constitute *massifs*. The trees are usually isolated from one another, with grassy ground between.

"Wherever pine trees occur in the neighbourhood of villages they have been very much injured by the villagers, who cut away the wood at a height of two or three feet from the ground for making torches. These are even sold in villages distant from pine forests. At Pwehla it was noticed that some of the trees had been killed by being mutilated in this way. The *Pinus Kasya* in particular is very resinous, and, when wounded, the resin exudes very freely.

"In *forest*.

"Forests in which *in* (*Dipterocarpus tuberculatus*) is the principal or a very prominent feature were met with in the following localities:—

(1) A small patch between Namkôk and Sagwè.
(2) In mixture with *Pinus Merkusii* for some miles round Namhlut.
(3) Scattered patches between Lamaing and Sisaing.
(4) In the valley of the Pun *chaung* where crossed by the road to Maukmè.
(5) In the valley and on the hills to the south-east of Maukmè.
(6) About Sawa and on the hills to the south-east of it.

"No *in* is met with on the higher plateaux nor on the hills between them. I think it would be found that *in* does not occur in forest higher than 3,200 feet above the level of the sea; at any rate I have never seen it above this elevation either in Upper or Lower Burma.

Ingyin *forest*.

"*Ingyin* (*Shorea Siamensis*) is the most common tree in the Southern Shan States. Forests in which it is the principal or a prominent feature were met with in the following localities:—

(1) Between Samka (Saga) and Namkôk and again between the latter and Sa Koi (Sagwè).
(2) Between Payagôn and Namhlut on the borders of and extending into the *in* forest.
(3) On the hill to the east of Sisaing.
(4) On the hills on both sides of the Pun *chaung*.
(5) On the hills on both sides of the Namyôn valley.
(6) On the descent to Namsi and on all the dry hills north and south of that place, also on the hills east and west of the road from Kolônbauk to Ta Möng Kai and up to the watershed on both sides of Ta Möng Kai.
(7) On the hills to the south-east of Sawa.
(8) On the hills near Maingpan and for some miles on the road from Maingpan to the Salween.
(9) On the descent to Montawa.

"It is very rare that the *ingyin* tree attains more than 4 feet 6 inches girth. It grows on the poorest of soils, but in this case is often stunted and attains a still smaller girth. The most extensive forests seen were those on the hills in the neighbourhood of the Namtĕng (Tein *chaung*).

There the soil is excessively poor and at the end of December the trees were already rapidly dropping their dead leaves, and the forest fires were burning through the forest even at night. The most common species associated with *ingyin* are *thitya* (*Shorea obtusa*) and *taukgyan* (*Terminalia elata*), but *thitsi*, oaks, and other less important trees are also found in mixture with it.

"*Oaks and chestnuts* (*thitsi*).

"It will be seen from Appendix A that complete botanical specimens were collected of five kinds of oaks. Of these one proves to be a new species, which will be named and described by Sir Joseph Hooker, and two others were previously unknown as occurring in Burma, although they have been previously found in India. Several other species occur, but only the leaves were obtained and this was insufficient to allow of their determination. Of chestnuts two species were obtained, but one of these could not be determined as the specimens were incomplete.

"Oaks are very common, whilst the chestnuts are less so. They always form a subordinate feature in the forests in which they occur. They are found in mixture with *in* forest, also with *ingyin* forest, and even at higher elevations they are found with *Pinus Kasya*. As previously remarked, the species are numerous, some of them attaining large dimensions, whilst others are smaller. One species, which is somewhat rare, has a bark which recalls that of the *cork oak*, which yields the cork of commerce furnished by the forests of the south of France, Spain, and Algeria.

"*Thitsi* (*Melanorrhœa usitata*) is a common tree in the *in* and *ingyin* forests and has also been found on some of the higher hills where *in* and *ingyin* do not exist. Kurz states that it is found up to 3,000 feet of elevation, but I have found it at a greater elevation than this near Yedwingyi (3,640) and to the west of Saôn (probably 4,000 feet). This is the tree which exudes a black gum, the famous Martaban varnish used for lacquering purposes. Wherever the tree is found, this gum has been invariably worked. It is collected at the beginning of the rains and in the same manner in which it is done in Lower Burma."

Name of species.	Remarks.
Pittosporum floribundum (W. and A.).	Previously unknown as occurring in Burma. Found in Himalayas, &c.
Schima mollis (Dyer) ...	The genus *schima* has in Burmese the generic name of *thitya*.
Shorea Siamensis (Miq.) ...	Burmese, *ingyin*: is perhaps the most common tree in the Shan States.
Urena Repanda (Roxb.) ...	This species is not described in Kurz's "Forest Flora of British Burma."
Kydia calycina (Roxb.) ...	Burmese, *dwa bôk*.
Berrya ammonilla (Roxb.) ...	Burmese, *petwun*.
Columbia floribunda (Wall).	A shrub previously found east of Toungoo.
Chickrassia tabularis (Juss.)	Burmese, *yinma*.
Zizyphus rugosa (Lamk.) ...	Burmese, *myaukzi*.

Name of species.	Remarks.
Zizyphus incurva (Roxb.) ...	Previously unknown in Burma, but found in Nepal, Bhootan, &c.
Rhus paniculata (Wall.) ...	......
Melanorrhœa usitata (Wall.)	Burmese, *thitsi* or varnish tree.
Millettia Brandisiana (Kurz)	Burmese, *thitpagan*.
Butea frondosa (Roxb.) ...	Burmese, *paukbin*.
Bauhinia variegata (L.) ...	Burmese, *bwègyin*.
Cœsalpinia pulcherrima (Sev.).	Burmese, *daungsôk*.
Cœsalpinia sepiaria (Roxb.)	Burmese, *sukyinbo*.
Cassia auriculata (L.) ...	......
Acacia sp. (Aff. A. Eburneæ).	......
Acacia Farnesiana (L.) ...	Burmese, *nanlóngyaing*.
Prunus puddum (Lindl.) ...	A wild peach tree.
Rubus lasiocarpus (Sm. Var.)	......
Rubus ellipticus (Sm.) ...	The *Rubies flavus* of Kurz.
Carallia lucida (Roxb.) ...	Burmese, *maniawga*.
Melastoma Malabathricum (Lamk.).	Burmese, *myetpyè*.
Lagerstrœmia sp. ...	Specimen not sufficiently complete to allow of determining the species.
Heteroxopanax fragrans (Seem).	Burmese, *tachausa*.
Stephegyne diversifolia (H. F.)	Burmese, *taingthè*.
Leucomeris decora (Kurz.)...	.. ...
Inula Cappa (D. C.) ...	A herbaceous composite flower common on the grassy plateaux.
Laggera alata (Schulz, Bip.)	(as above)
Vernonia sp.	A new species not yet named.
Isopappus Chinensis (Hook *et* Arn.).	Herbaceous composite plants.
Anaphalis araneosus (D. C.)	(as above)
Anaphalis adnata (D. C.) ...	(as above)
Tagetes erecta (L.) ...	(as above)
Vaccinium sp. ...	......
Mœsa ramentacea (Wall.) ...	......
Bassia sp. ...	A new species not yet named.
Symplocos racemosa (Roxb.)	......
Buddleia Asiatica (L.) ...	Burmese, *kyaukmigu*, an evergreen large shrub.

Name of species.	Remarks.
Solanum torvum (Swartz) ...	A shrubby perennial.
Wightia gigantea (Wall.) ...	Not previously found in Burma, but occurs in Nepal, Sikkim, &c.
Heterophragma adenophylla (Seem.)	Burmese, *petthan*.
Gmelina arborea (L.) ...	Burmese, *yèmenè*.
Vitex trifolia (L.) ...	Described in Kurz. as *V. agnus castus.*
Vitex alata (Heyne) ...	Burmese, *kyetyo*.
Clerodendron lasiocephalum (Clarke).	Previously unknown in Burma.
Helicia sp.	A new species not yet named.
Loranthus pulverulentus (Wall.).	A parasitical shrub.
Bridelia stipularis (B. L.) ...	Burmese, *sinmanopyin*.
Phyllanthus emblica (L.) ...	Burmese, *tashapin*.
Mallotus Philippinensis (Muell Arg.).	Burmese, *tawthadin*.
Croton oblongifolium (Muell Arg.).	Burmese, *thityin*.
Ficus obtusifolia (Roxb.) ...	Burmese, *nyaunggyat*.
Ficus cunia (Buch. Ham.) ...	Burmese, *yèkaong*.
Engelhardtia spicata (B. L.)	......
Castanopsis tribuloides (A. D. C.)	Burmese, *kyansa*, the generic name of the chestnuts.
Castanopsis sp. ...	Incomplete specimens.
Quercus polystachya (Wall.)	Burmese, *thitkya*, the generic name of the oaks.
Quercus sp. ...	A new species not yet named.
Quercus Mespilifolia (Wall.)	......
Quercus annulata (Wall.) ...	Previously unknown in Burma.
Quercus Lineata (B. L.) ...	
Salix tetrasperma (Roxb.)	A willow tree attaining large dimensions. Burmese, *momaka*.
Pinus Kasya (Royle) ...	Burmese, *tinyu*. The leaves in bundles of three.
Pinus Merkusii (Jungh) ...	Burmese, *tinyu*. The leaves in bundles of two.
Cycas pectinata (Griff.) ...	Burmese, *môndaing*. A cycas common in the hills in *in* forests.
Dendrocalamus strictus (Nees).	Burmese, *myinwa*.
Pteris aquilina (L.) ...	The bracken which occurs abundantly on the grassy plains.

Name of species.	Remarks.
Jack-fruit tree (Burmese, *peinnè*).	*Artocarpus integrifolia* (Willd.) is the common cultivated species.
Tamarind (Burmese, *magyi*)...	*Tamarindus Indica* (L.) is the cultivated species. No wild ones have been observed in the Shan States, though they may probably occur.
Mango (Burmese, *thayet*) ...	*Mangifera Indica* (L.) is the cultivated species. No wild ones have been observed in the Shan States, though they may probably occur.
Ficus (Burmese, *nyaung*) ...	Species represented in Shan States are very numerous.
Teak (Burmese, *kyun*) ...	*Tectona grandis* (L.).
Mèzali	*Cassia Siamea* (Lamk.).
Shasaung	*Euphorbia sp.* Two or three species are used for hedges.
Taróksaga	*Plumieria acutifolia* (Poir.). Planted in gardens, villages, and about *kyaungs*.
Gangaw	*Mesua ferrea* (L.). Does not occur wild, but a few seen planted, near *kyaungs*.
Thitya	*Shorea obtusa* (Wall.). This tree generally occurs in mixture with *ingyin*. It must not be confused with another *thitya*, a species of *schima*, which occurs in moister forest and is unfortunately known by the Burmans under the same name.
Taukgyan	*Terminalia alata vel. T. crenulata.*
Kónpyinma	*Lagerstræmia sp.* Several species of *lagerstræmia* occur in the Shan States.
In	*Dipterocarpus tuberculatus* (Roxb.). I think it probable that the *in* of the Tapet *chaung* plateau and that near the Pun *chaung* may be a different species than *tuberculatus*, but the trees were not in flower or fruit when examined.
Thabye	*Eugenia sp.* Several species occur, but are all known by the Burmese as *thabye*.
Zinbyun	*Dillenia sp.* Is but sparsely represented in the Shan States and the exact species unknown.
Hmanni	*Gardenia erythroclada* (Kurz.).
Hmanbyu	*Randia uliginosa* (D. C.).
Zibyu	*Cicca macrocarpa* (Kurz.).
Yemein	*Aporosa villosa* (Baill.).

Name of species.	Remarks.
Kabaung	*Strychnos nux vomica* (L.).
Thitcho	*Sideroxylon tomentosum* (Roxb.).
Pyinkado	*Xylia dolabriformis* (Bth.). Found only in the lower forests of the Shan States.
Yôn	*Anogeissus acuminata* (Wall.).
Padauk	*Pterocarpus sp.* The species represented in the Shan States is probably *P. Indicus.*
Thansha	This is the tree the bark of which when boiled down yields a substance which is used for adulterating cutch. I have not succeeded in finding flowers or fruit on the trees and have not been able to determine the species.
Gwè	*Spondias mangifera* (Pers.).
Sit	*Albizzia procera* (Bth.).
Maikchauk	A species which is found in the Shan States and is common to the Pegu Yoma. Botanical name unknown.
Yingat	*Gardenia sp.*
Letpan	*Bombax Malabaricum* and *B. insigne.* The two species are very distinct.
Didu	
Thandè	*Stereospermum sp.*
Nabè	*Odina Wodier* (Roxb.).
Tanaung	*Acacia leucophlœa* (Willd.). Very common in very dry forests near the Tein *chaung.*
Zi	*Zizyphus jujuba* (Lamk.). Occurs wild, but is frequently cultivated for its fruit.
Nibasè	Common near the Tein *chaung* in scrub jungle, and yields a dye.
Lain	*Terminalia sp.*
Cutch (Burmese, *sha*) ...	*Acacia catechu* (Willd.).
Ngu	*Cassia fistula* (L.).
Ôkshit	*Ægle marmelos* (Corr.).
Chinyôk	*Garuga pinnata* (Roxb.).
Thamaga	*Melia azedarach* (L.).
Malwa	This is a tree found also in the Pegu Yoma. The botanical name is unknown.
Leza	*Lagerstrœmia sp.*
Kyathaung bamboo ...	*Bambusa polymorpha* (Munr.).
Wanet bamboo	*Gigantochloa macrostachya* (Kurz).

PLATE XXVII



Photo.-Block. Survey of India Offices, Calcutta, 1899.

CHINBOK WOMEN.

Name of species.	Remarks.
Kyetlo bamboo ...	... *Dendrocalamus Brandisii* (Munr.).
Apple trees ...	... Wild apples are very common on the higher plateaux of the Shan States. It is probable that *Pyrus Indica*, *P. pashia* and *P. granulosa* are all represented.

The India-rubber forests.

The main India-rubber producing tracts lie beyond the administrative boundary, north of the Myitkyina district. The following notes on these forests are from the report of Mr. H. N. Thompson, written in 1896. Most of the rubber comes to Burma, but a certain amount seems to be carried over the Patkoi range by Naga coolies to Assam. Mr. Thompson says:—

"The India-rubber as found growing in the Hukong valley is not a gregarious tree. It appears scattered generally through the dense evergreen forests, but nowhere reaches the density per acre, say, of an average teak forest. Occasionally a family group of four or five trees may be met with, but these are very rare indeed, and the usual thing is to come across a mature tree every 200 or 300 yards in the richer forests. The average of four valuation surveys made at the headwaters of the Namkong *chaung* gives 48 large trees per acre. *Ficus elastica* is essentially a light-demanding species, and, though an evergreen and associated with and growing amongst dense shade-bearers, no tree can be more exacting in its demands for light. Wherever it is surrounded with dense shade it will be found that this tree, in order to escape from it, has grown to enormous heights, in many instances towering head and shoulders over every other tree in its vicinity. Trees of great size were met with on the upper slopes (3,000 feet) of the Loima hill at the headwaters of the Namkong *chaung*, and some of them were certainly the largest trees that I have ever seen of an species whatever. In accordance with its light-demanding character, seed lings growing on the ground are extremely rare and, though I searched diligently for them on many occasions on the rich soil surrounding the parent trees (but covered with dense shade), I was never able to find one. The only seedlings seen by me were growing as a rule in the forks or crevices in the bark of light-foliaged trees (*Dalbergias*, &c.) at a great height from the ground, and occasionally on the half-rotten trunks of dead and dying plants in places where, from windfalls or otherwise, clearings had been formed in the leaf canopy. The young seedling thus gets a good start over its rivals in the struggle for existence and grows rapidly up the stem of its host, encircling the latter with its aerial roots and sending them downwards towards the ground till they form great supports on which the main trunk of the fig stands; meanwhile the host is gradually killed off and eventually disappears altogether, and the rubber tree is left standing on five or six or even more thick aerial roots. These roots often start from a height of sixty to ninety feet and attain girths of from five to eight feet.

"The main factor determining the distribution of *Ficus elastica* seems to be an excessive humidity of the atmosphere. It appears to be able to accommo-

date itself to many varieties of soil (probably because its earlier stages are passed on a host) and to be indifferent generally speaking to rather large variations in altitude, though growing best at from 2,500 to 3,500 feet. The absence of a very high temperature would also seem to favour its growth, as the species is unknown from the otherwise suitable localities in Southern Tenasserim. However, this latter point may or may not be correct, and very likely the question may be complicated by the correlation of factors that we are not as yet cognizant of. But this much is certain, that it is found growing in abundance on the Loimaw hill at an altitude of 5,200 feet, and is reported from high altitudes in the Jan Mun Bun mountains to the east of N'tup N'sa and on the northern and southern watersheds of the Taron river, the higher crests and peaks of which are covered with large masses of snow in the winter. From what I could make out of the information given by the Singpho Chief of Ningbyen and N'tup N'sa it does not appear to actually grow in places that are subject to snow-falls, but is found in all the deep damp gorges on the slopes of such hills, very often creeping up the former to considerable altitudes. The winter snow-line in the latitude of the northern portion of the Hukong valley (latitude 27° north) would appear to lie at least somewhere between 7,000 and 8,000 feet. Colonel Woodthorpe and Major Macgregor, on their return journey from the Bohr Khampti State, found it lying in large patches on the Chaukkan and Moko-shat passes in April; these passes lie to the north-east of N'tup N'sa and are visible from Ningbyen; their heights are 8,450 feet and 7,000 feet respectively.

"If the tree does actually grow high up the mountains on the north-east it must experience severe winter frosts, but it is probable that the influence of the latter is modified to a certain extent by the position of the seedlings on the stems of their hosts, and they very likely do not suffer to the same degree as they would if growing on the surface of the soil.

"Mr. O'Bryen, in his report on the India-rubber forests of the Bhamo district, divides those situated in the Hukong valley into the following areas, basing his classification on the routes by which the rubber is exported. As these divisions are convenient for the purposes of description, I will not disturb them; they are—

I.—The tract north of the Tanaikha from its junction with the Taron river to a point 20 miles above Lagang village.

II.—The southern basin of the Tanaikha from the Numgaum *chaung* down to a point 20 miles above Lagang village on the Tanaikha, excluding the sources of the Nampyu.

III.—The area drained by the Namkong or Mogaung river, north of Kamaing, including the sources of the Nampyu.

IV.—the area drained by the Tanaikha south of a point above 20 miles above Lagang village and the left drainage of the Namkong between Kamaing and Mogaung.

"To this I will add the whole drainage area of the Taron river above its junction with the Gedu affluent, the greater portion of the India-rubber from this tract being exported to Assam *viâ* the passes across the Patkoi range.

"*No. I.*—It appears that this tract is still the richest in the valley, but the difficulties in transport are increasing, as the rubber now has to be searched

for at great distances away from the nearest villages, right into the heart of the Jan Mun Bun mountains, where it is still said to be plentiful. The price of rubber at N'tup N'sa is said to be Rs. 2 per viss, and the cost of transport by mules from that village to Laban Rs. 15 per trip for each animal employed. The trade-route used to be over the Ku Mun range to Myitkyina, but difficulties with the Sana Kadaing interrupted the traffic and water is very scarce and a supply for two or three days has to be carried in bamboos.

"*No. II.*—Contains the rubber forests lying at the sources of the Nampyu to the west of Maingkhwan. Some of the rubber from these forests is supposed to be taken down the Chindwin to Kindat, but the natural route is to Laban or Tinging and then *viâ* Kamaing to Mogaung. With regard to the output of rubber from this area, it is extremely difficult to form an estimate. No reliable information can be obtained from either the Singphos or the Chinese traders employed in buying it from the latter, as both are interested in keeping the real state of affairs dark. Such details, as well as the yield of single trees, can only be ascertained by a series of check stations and experiments. As a single instance of the contradictory statements given by the Kachins I may say that they informed me repeatedly that the yield of a large unworked India-rubber tree in one season does not exceed 10 viss, a very different figure from that usually given, and of course too low, as I have personally seen about double that quantity extracted from a large tree.

"*No. III.*—The area drained by the Namkong *chaung*, north of Kamaing and the sources of the Nampyu. These forests are said to be rich in rubber, and from what I saw of them I should say they are much above the average. The richest portions lie at the headwaters of the Namkong and Namsan *chaungs*, the latter being a large feeder of the former stream. *Ficus elastica* is found growing in abundance along the banks of the smaller streams close to their sources, and it is also met with pretty frequently on the higher slopes of the hills up to an elevation of 4,000 or 5,000 feet. I came across some large trees on the slopes of the Loimaw range at an altitude of about 3,800 feet and was informed by my guide that it is found growing right on to the crest of that mountain range. The largest India-rubber trees that I have seen were those growing on the slopes of the hills at an altitude of 2,000 to 3,000 feet, some of them attaining a height of from 150 to 200 feet and a girth round the outside of their aerial roots of 100 to 150 feet. Such trees, it is needless to say, tower above the surrounding vegetation, the average height of which is by no means low and much greater than that of forests growing in the plains.

"Associated with this tree were various species of *quercus, castanea, dalbergias, dipterocarpus, Cedrela toona, tetrameles,* and others such as *Mesua ferrea.* The latter also attains to good dimensions here and is conspicuous for the remarkable manner in which wholesale natural reproduction takes place, the ground being covered with seedlings of all sizes. Of course it is a shade-bearer and can stand any amount of cover overhead, otherwise it would not have much chance of surviving in these forests. In the damp hill ravines ferns, palms, screw-pines, &c., are plentiful and relieve the monotony of the high forests growing on the slopes. The undergrowth in the latter is not so dense as in the forests of the plains, and

it is possible to move off the beaten tracks without having to use the *da* very much. Four valuation surveys made by me in this area gave the following results:—

No. I.—Along the banks of the Namkong (crossing over alternately from bank to bank at frequent intervals). Distance 7 miles; large trees 23; seedlings 8.

No. II.—Along the Namkong and then up its feeder the Nammaw, taking the two banks alternately at frequent intervals. Distance 4 miles; large trees 19; seedlings 6.

No. III.—Along the right bank of the Namsang. Distance 4 miles; large trees 13; seedlings 2.

No. IV.—At the headwaters of the Namsang, along the slopes of the Loimaw range up to a height of 3,000 feet. Distance 7 miles; large trees 31; seedlings 8.

"The countings were made along lines taken through the forest and only those trees were included that were found growing within a distance of a chain on either side of the line of march, as it was impossible to see beyond this distance, owing to the dense cover overhead. It is very probable that the number of seedlings counted is below the actual number growing in the area included in the surveys, as they are extremely difficult to find until they have reached fair dimensions, and many of the smaller ones must have escaped observation. By seedlings I mean plants that are still dependent on their hosts for support and have not commenced to rely on their own aerial roots.

"*No. IV.*—This forest is just within the Mogaung subdivision, but parties of the Kachins from the Hukong valley and the Amber Mines come down regularly to collect taxes on the rubber collected.

"The rubber is collected in these forests only during the dry season, after the Singphos have reaped their crops. It is usually brought down on mules to Laban and then put into boats and sent down to Mogaung. At the junction of the Lasi *chaung* with the Namsang the Chinese traders have built a hut, where they store the rubber collected from the Loimaw range; from this hut there is a good mule track leading to Laban and Wakong (opposite Laban). The rubber is brought from the hills to the storing hut either in baskets or the balls are strung on to long canes and dragged down the beds of the streams. The price paid per 100 viss at Laban is Rs. 2-8-0. But one local viss is equal to 1½ true viss (3·65 lbs.), so that the Chinamen profit enormously.

"There are several Chinamen living at Laban and Wakong, and they are all employed in the India-rubber trade. Great quantities of rice, silk *pasos*, *gaungbaungs*, &c., and stores such as Swiss milk, &c., are kept by them and sold to the Kachins (at ruinous rates), who pay the price of the goods in India-rubber.

"*No. V.*—The whole drainage area of the Taron river above the Taron-Gedu confluence. The greater portion of the India-rubber collected in this region is exported to Assam *viâ* the passes across the Patkoi range. The following information concerning the rubber collection in these forests has been kindly supplied to me by Captain Swayne of the Assam party, who

took careful notes of all matters connected with the trade during his journey from Assam to Ningbyen.

"The Naga tribes under the Assam Singphos reap their crops in December, and then go up the Loglai and down the Taron river to cut rubber. The early men return in the middle of January, and by the end of the month a great number would be on their way back. Thus the Assam party met at different times during the end of December and January over 150 Nagas and Singphos on their way to the rubber-forests. They were sometimes in batches of three or four and in others twenty men. Every tree in the Loglai and Taron basins is known, and their positions are pointed out from father to son.

"The main route used by the Naga rubber-cutters on their way in and out of the valley is that which lies through Lapti (on the south side of the Nam Yong lake) and through the villages owned by Sambinsong's successors. As regards the outlet for rubber we may generally assume as fairly correct that the rubber collected in the forest north of the Gedu affluent of the Taron river goes to Assam, including that collected within two days' march of Nam Yong village. The rubber collected south of Gedu is controlled by N'tup N'tsa and goes down the Hukong valley. There are Kariyas, native bunnias, who have agents at Bisa, Ningon, Samon, and other viilages in Assam, who buy up rubber as it is brought in by the Nagas and Singphos and export it to Calcutta. There is no reason whatever why the outlet of rubber from this part of the country should not lead into Assam *viâ* Vamyum, as the short Naga route from Ningbyen to Namyan, Lapti, Machum, and Marguerita is traversed by laden coolies in twelve days. Rubber is never carried by mules into Assam; but plenty of Naga coolies can always be got after their crops have been gathered, and are probably more efficient when working in their own country than any other coolies we know of in India.

"Taronku is without doubt the greatest rubber centre here. It is situated at the Loglai confluence, and consists of a group of three villages, and by far the more valuable portion of the forest lies up the Taron river to the Charikkan pass, on the route traversed by Colonel Woodthorpe and Major Macgregor on their journey to Hkamti Lông.

"All Nagas going up this river must pass through the village of Taronku, and a fee of Rs. 1-8-0, or in lieu thereof three seers of rubber, is levied on every man who wishes to cut rubber by the headman of the villages. This amount is usually collected in the form of rubber, and when a sufficient quantity has accumulated it is sent into Assam (usually to Bisa) for sale, and fetches a price varying from Rs. 40 to Rs. 70 a maund according to the market quotation. Nam Yong village also collects tribute from rubber-cutters passing through it.

"Rubber on the Turong and Gedu rivers is every year becoming more scarce as the trees are becoming overworked; the consequence is that it not unfrequently takes a man forty days to collect a coolie-load of rubber. Most of the trees seen by the Assam party had been tapped some time or other, and all up the Loglai and Turong rivers the trees met in the immediate vicinity of the streams are either dead or dying from being overworked. The Singphos entirely control the Nagas on this portion of the Assam frontier, and stand to them (extraordinary as it may seem) in very

much the same position as a tea-planter and his coolies. Their word is law and is enforced (chiefly morally) by a very few Singphos over a great number of Nagas. In times of scarcity Naga villages are naturally called upon for contributions, and influential men like Sambruineongs have their agents periodically touring through the Naga villages, checking all that goes on. Thus the number of rubber-cutters who leave their villages for the Turong forests is known, and even if they succeed in evading the impost of the Singpho villages through which they pass, they would inevitably in the long run have to pay up. The Assam Singpho chiefs are believed to impose a tribute on rubber passing through their charges. Rubber when first collected is fairly pure, but the Nagas have learnt the trick of adulterating it with earth and stones (to make up weight) from the native bunnias. Consequently Assam rubber has not hitherto been looked upon with favour by Calcutta brokers."

As it appeared from the reports of Messrs. O'Bryen and Thompson that the rubber forests were being rapidly destroyed by being overworked, measures were adopted to check Kachin greed in its most disastrous form, that of root-tapping. Traders are able to distinguish the underground rubber from rubber from the branches and trunk, and have always been in the habit of paying a smaller price for the former. The branch rubber is said to change to a reddish brown, while the root rubber becomes a dirty grey and is generally in the form of flattish lumps of more or less circular shape. The branch and trunk rubber is in long threads of varying thickness and is more elastic than the root rubber. A special duty of two rupees a viss was therefore placed on the caoutchouc drawn from the underground roots, and the effect has been greatly to check this ruinous form of tapping.

Mr. H. N. Thompson writes as follows of the forests of the Hu Kawng valley, which are of a different type from those of Upper Burma generally :—

"The Hu Kawng valley is an essentially well-wooded tract of country. It consists practically of one huge evergreen forest, intersected here and there with grassy plains and comparatively small patches of cultivated lands and village sites. This evergreen forest is perhaps one of the most extensive in Upper Burma and appears to be characteristic of the country north of Mogaung. It is represented in the southern portion of the province by the evergreen forests of Tenasserim, but differs from the latter in one important respect, inasmuch as it is not associated with dry tracts of *indaing*, as frequently occurs in the forests of Tenasserim and those of Central Burma.

"From Mogaung northwards no trace whatever of this well-marked type of dry forest was met with, and not a single specimen of *Dipterocarpus tuberculatus* (the dominant species in *indaing*) was seen, though some of its congeners, those that require a heavy rainfall, are common enough. Mixed deciduous forests were not found in any part of the valley visited by us; the nearest approach to this type that we came across was a small

patch of forest to the north of Ningbyen, growing on sandstones and gravels, and a few narrow belts skirting the grassy plains and containing various species of *Naucleas* (*N. sessilifolia, N. rotundifolia, N. parvifolia, &c.*), *dillenias* (*D. pentagyna, D. parviflora*), *terminalias* (*T. belerica, T. chebula* and *T. alata*), *Odina Wodier, Phyllanthus sp., Cycas Siamensis, Phœnix sylvestris* and *Bombax Malabaricum.*

"For the purposes of distinction it is convenient to distinguish the following sub-types of forest, it being remembered that some of them very often merge into each other gradually and thus form mixed sub-types :—

(*a*) *Low-lying, alluvial evergreen forests,* with a special modification known as *swamp forests ;*

(*b*) High-lying, *damp hill forests ;*

(*c*) *Alluvial grassy plains ;*

(*d*) *Pônzos and old taungyas ;*

(*e*) *Mixed deciduous forests* (very scarce).

"Taking these in the order given, their characteristic species, soils, &c., as found in the Hu Kawng valley are—

"(*a*) *Low-lying, alluvial evergreen forests and swamp forests.*—This is the principal type met with in the valley proper and it is mainly confined to the large central plain, creeping up the surrounding valleys wherever the latter are flat and low enough for it. The factors that determine its distribution are a heavy rainfall and a rich alluvial soil, very often with a substratum of clay, the latter, when close to the surface, giving rise to the modification known as swamp forest, but this modification is also brought about by the floodings of the river banks for many months in the year and the retention of the flood-water in the low-lying depressions adjacent to the river beds. Of the species characteristic of these low-lying alluvial evergreen forests the following were met with in the valley :—

"Oaks (*Quercus acuminata* and *Q. Lappacea*), chestnuts (*Castanea Indica, C. argentea* and *C. Javanica, var. Falconeri*), *Tetrameles baingbin* (*T. nudiflora* and one other gigantic species that I could not identify), *Dillenia Indica* (very common), species of *Ardisia, Amoora spectabilis, A. cucullata* (very common), two or three species of *Michelia, Mangifera, Laurinæ, Anthocephalus cadamba* (common), *Æsculus Assamica* (very common along banks of streams), *Terminalia myriocarpa, Lagerstrœmia flos-regina, L. parviflora,* and *L. tomentosa ;* wood-oils such as *Dipterocarpus lævis, D. turbinatus* (on high-lying alluvium), *D. alatus* (the commonest *dipterocarp* in the whole valley), and *Hopea odorata* and many species of *ficus,* such as—

"*Ficus Bengalensis.*—Not uncommon, especially near Tinkrai village.

"*F. laccifera.*—Common in the dense evergreen patches. Sometimes tapped for rubber.

"*F. obtusifolia.*—Common ; reaches a great height and girth.

"*F. elastica.*—Generally distributed and often reaching enormous dimensions.

"*F. retusa.*—Common.

"*F. religiosa.*—Very rare.

"*F. excelsa.*—Rare in the plains.

"*F. glomerata.*—Very common.

"*F. Chittagonga.*—Common.

"*F. Cusiana.*—Very common, forming dense impenetrable thickets along the banks of *chaungs* and on the sites of old *taungyas.*

"*F. hispida.*—Common; and others that I could not identify. It may be truly said that the Hu Kawng valley is the headquarters of the arboreal figs.

"Dense cane-brakes forming impenetrable thickets are universally distributed. They are composed of various species of *calamus,* which are, however, difficult to identify. The following were recognized: *Calamus erectus, C. fasciculatus,* and *C. latifolius.* A palm, *Licuala peltata,* was occasionally met with, and on higher ground *Caryota urens* was common. In the south-west corner of the Hu Kawng valley, at the headwaters of the Namkawng, I came across a solitary palm that appeared to be a species of *Livistona,* probably *L. speciosa.*

"*Bamboos.*—These again are extremely difficult to identify, and as most of the species found in the Hu Kawng valley were new to me, I am not very confident as to their identification. In the low-lying forests the *wanet* (*Gigantochloa macrostachya*) is met with, especially in the southern portion of the valley, and on the higher parts the *wapyu* (*Dendrocalamus membranaceus*) and *wanwe* (*Dinochloa Maclellandii*). The latter is a scandent bamboo that formed a dense matted cover overhead, under which the footpaths in the valley often lead for many miles. There is a very large kind of bamboo cultivated by the Hu Kawng Singphos. It appears to be a *dendrocalamus,* probably *D. gigantea,* grows to an immense size, and is usually planted in clumps on the Singpho graves. It is not indigenous to the valley itself, but is said to have been introduced from the Naga hill ranges on the west. From the village of Ningbyen, especially along the edge of the cultivation on the north side of it, there are some beautiful avenues of a very handsome bamboo. Specimens of its leaves and stem that I collected were unfortunately lost on our return journey, and it is now impossible to ascertain to what species it belongs. It looked very much like a *Bambusa ferox.* These are extremely plentiful, and many species were noticed. The banks of most of the streams were lined with beautiful arborescent ferns such as *assoplula, glabra, alatebrosa,* &c. Mosses and lichens are numerous, and the latter may be seen hanging from the branches of most of the larger trees.

"(*b*) *The damp hill forests.*—This type clothes all the higher portions of the ground in the Hu Kawng valley above one thousand feet in elevation (the average height of the valley is about nine hundred feet above sea-level) and is found in a modified form up to four thousand feet on the Loimaw hill to the south-east of the plain, at the sources of the Nampyu and Namkawng. It was met with on the higher ground between Daffa and Lachum, at the Amber Mines, and along the whole of the watershed between the Nampyu and Namkawng. In the upper portion of its limit it assumes a more temperate form of vegetation and such genera as *andromeda, rhododendra, vaccinia,* &c., begin to appear, as was noticed on the Loimaw hill above three thousand feet. Many species of *quercus, castaneas,* and *laurinæ,*

different from those growing in the plains, are met with in these forests. Ironwood (*Mesua ferrea*), species of *artocarpus* such as *A. Chaplasha* and others; wild tea, such as *pysenaria* and probably also *camellia* (the latter collected by Mr. Wallace on the Patkoi range); *Cedrela toona* (common); one or two species of *dipterocarpus*, such as *Hopea odorata* (?), *ardisias, Duabanga sonneratioides, Stereospermum chelenoides* (?); *eugenias*, such as *E. præcox, E. tetragona, E. ceratoides;* species of ficus, including *F. elastica*, which grows here to an enormous size and towers above the surrounding vegetation; bamboos, such as *Dendrocalamus Hamiltonii*, and a species identified provisionally by Mr. Gamble as *Teinostachyum dullosa*, and others, are characteristic of these forests.

Pines are totally absent from the latter, and the only conifer met with was a species closely allied to the deciduous yew (*Taxicodium disticum*), if it is not identical with it. It was only found in one little patch of forest on the low (twelve hundred feet) undulating plateau separating the Nampyu and Namkawng basins.

The specimens noticed were growing on the edges of small swampy depressions and some were of large size, attaining a girth of eight or nine feet and a height of from eighty to one hundred feet. I was informed by the Kachin guides that they only know of the tree from this watershed, never having heard of its being found anywhere else, so that it appears to be extremely local. They call it the Thampu Pum and the watershed on which it is found the Thampu Bum. If this tree turns out to be really *Taxicodium disticum*, its distribution is very curious, as fossil specimens of this species have been found in the Miocene beds of Æningin in the Rhine valley close to Schaffhausen, and the tree is still found in a living state in North America.

Swamp forests.—These are composed mainly of such species as can stand water-logged soil, and whose roots are very often submerged under water for several months in the year. Such forests as a rule are not very extensive, and the largest we passed through was on the road between Daffa and Maingkwan. The species noticed were *Barringtonias* (*B. acutangula*), *Gmelina Asiatica, Nauclea diversifolia, Elæocarpus hygrophilis*, and others.

"(*c*) *The alluvial grassy plains*.—In several portions of the Hu Kawng valley there are patches of open ground covered with *kaing* and other grasses. They follow the streams, more or less, and are often found occupying the sites of old deserted villages and of cultivation that has lapsed. Such patches of *kaing* grass are found close to Palaw Bum, Maingkhwan, Daffa, and Tinkrai. Round the edges of these plains and sometimes scattered about inside them occur a few trees that are usually associated with deciduous forests. These species are *Careya arborea, Nauclea sessilifolia, N. rotundifolia, N. parvifolia, Dillenia pentagyna, D. parvifolia*, species of *phyllanthus, Albizzia procera, Terminalia belerica, T. chebula, T. alata* (?), *Bombax Malabaricum, Gardenia erythroclada, Homelium tomentosum*, species of *cassias, Cycas Siamensis*, and *Phœnix sylvestris* (?)

"(*d*) *Old taungyas*.—Wherever *taungyas* have been deserted for a sufficient number of years it will be found that they have been overgrown

by a type of jungle very often quite distinct in character from that originally growing on the site. It usually consists of a dense growth of shrubs and small trees inextricably mixed up and perfectly impenetrable to men unarmed with *das* or other cutting implements. In the Hu Kawng valley these old *taungyas* were generally overgrown with various species of *Calamus Strobilanthus*, *Flemingia*, tall *compositæ*, and *Ficus cunia*, which very often forms dense thickets in such places.

"With the exception of the damage done by *taungya*-cutters and the felling here and there of a few trees for the purpose of manufacturing canoes, it may be said that the forests in the Hu Kawng valley are practically untouched, excepting of course the India-rubber trees. Timber for building purposes is rarely employed by the Singphos, whose huts are constructed entirely of bamboos, the posts being procured from the stems of a giant species that is usually grown in clumps close to their villages. The roof is generally composed of thatch made out of grasses or bamboo leaves, and the walls and floors of split bamboos. The only pieces of large timber employed by them are for the main and some of the smaller posts supporting their verandahs. These posts are confined to the front portion of the house and are made out of trunks of a very large tree called by the Singphos the *eitpum*. I was unable to ascertain to what order this tree belongs, as it was neither in flower nor in fruit at the time of our visit. It has somewhat the habit of the *pyinkado*, but grows to a very much larger size, and in fact shares with *Ficus elastica* the honour of being one of the largest trees in the valley. It was particularly abundant on the low watershed between the Nampyu and Mogaung stream, and was met with again in great numbers on the lower slopes of Loimaw at the headwaters of the latter stream. For building purposes it is absolutely worthless, as it rots after two or three years, and one can easily thrust a walking stick into some of the older posts. It is used by the Singphos chiefly on account of the huge girth it attains, and for this reason it is utilized for the large central post that supports the verandah, as the heads and horns of animals sacrificed by them to the *nats* can be better displayed when nailed to posts of such large dimensions. The prevalence of the tree and the light weight of its wood are probably also factors determining its choice.

The majority of the larger Singpho villages are surrounded by comparatively speaking extensive patches of permanent cultivation (paddy), and in the vicinity of such places little or no *taungya*-cutting is done. What practices prevail in the mountains bordering the valley I am unable to say, but as far as the plains are concerned forest conservancy will be an easy task. The most northerly limit of the teak tree appears to be the latitude of Taban, where I came across a small patch. It occurs again a little further south near Kamaing, and here it is far from uncommon in the alluvial plains.

"The plants usually cultivated by the Singphos round their villages are these:—

"The jack, guava, mango (only seen at Maingkhwan), pomegranate, peach (*Pennus persicus*), and very generally the India-rubber.

"Bamboos.—*Dendrocalamus gigantea* (?) and one or two other species.

"Cereals.—Rice and Indian-corn.

"Other species.—Sugarcane, poppy, mustard, brinjals, chillies, and tea (in small quantities).

"To recapitulate.—The Hu Kawng valley is covered with a dense mass of evergreen jungle (denser if anything in the low alluvial portions) with thickets of cane-brake running through it, and only broken into occasionally by grass plains, many of which probably owe their existence to human agency. In the hills the principal trees attain a great height (100 to 180 feet) and form unbroken masses of high forest, overtopped here and there by gigantic India-rubber trees and species of *Dalbergia*. The undergrowth is not so dense as in the alluvial forests and the soil is of a drier character. Such high forests are characteristic of the middle slopes of the Loimaw, between 1,000 to 3,000 feet. Up to an altitude of 3,000 feet the forests are essentially of the tropical evergreen type, but above this level temperate forms such as *rhododendra*, *andromeda*, *vaccinium*, &c., make their appearance, and the latter increase in numbers as the altitude increases till the majority of the tropical forms disappear altogether and are replaced by general species peculiar to temperate latitudes. It is true that a species of wild strawberry, a violet, and blackberries are found growing on the plains or on the lower slopes of the hills, but they in no way affect the general tropical character of the vegetation.



FIG. 1. WA IN FULL DRESS.



Photo.-Block. Survey of India Offices, Calcutta, 1899.

FIG. 2. GROUP OF WA GIRLS.

CHAPTER XIV.

AGRICULTURE AND INDUSTRIAL ARTS.

Agriculture.

AGRICULTURAL operations are much more varied in Upper than in Lower Burma, where the only important field crop is paddy and there is little or no artificial irrigation. In Upper Burma a large variety of field crops are grown, the principal of which are paddy, sessamum, maize, jowar, cotton, beans, wheat, and gram. Excepting *mayin* or dry-weather paddy, the first six of these are rainy season crops; the last two, wheat and gram, and, on river lands and islands, tobacco, peas, chillies, and tomatoes are sown at the close of the rains. Sugarcane is also grown in parts; it is a twelvemonth crop. In Upper Burma the seasons are irregular and the rainfall is capricious. A field or a tract may yield a bumper one year and the next may hardly yield the amount of the seed sown. In several districts also the customs of rotation of crops and of double cropping and mixed cropping prevail. Thus on some lands jowar rotates with cotton in alternate years; on others the rotation is cotton in one year, then the next year early sessamum followed by a crop of jowar, and then cotton again in the third year. Maize and even early beans sometimes rotate with late sessamum. In some parts the rotation goes on steadily year after year without a break; in others the land is allowed a year's rest between each crop. On certain descriptions of land a crop of early sessamum is followed in the same year by a crop of late paddy or of jowar. In some favoured lands, where there is irrigation, an early paddy crop is reaped, and then immediately followed by a late paddy crop. A very few blocks are capable of even three crops:—

Mr. Maxwell Laurie, however, remarks:—

"No process in any way approximating to our idea of rotation of crops is discoverable. The system of rotation of crops is applicable to dry uplands only. It is not applicable under the present agricultural conditions to irrigated land, because the agriculturist in Minbu, as elsewhere, refuses to grow anything but paddy in irrigated land, nor is it applicable to upland paddy, the present practice being to wait for good rain in the hope of growing paddy. By the time all hope of being able to grow paddy has passed away, it is usually the case that all hope of growing anything else has also passed away. In land annually inundated the effect of the floods in altering the soil is the first consideration; the date at which the floods subside

is also an important consideration towards determining what crops shall be grown, and the best planned scheme of rotation would be upset by the force of these considerations."

After an exhausting crop like gram, the land is often left fallow for three or four years, or on good soil for one or two, followed by a crop of *pèyin*, or alternately fallow and a crop of *pèyin* for three or four years. But on dry uplands, in the Dry Zone, with a rainfall varying from fourteen to forty inches, where the heavy rain is sometimes early, sometimes late in the season, with long intervals of high wind and tropical sunshine to dry the soil, "it is evident that there "are conditions which will render it impossible for the agriculturist to "observe a rotation of crops, even if he desires. He is entirely at "the mercy of the rainfall. With good early rain every cultivator "of upland will grow early sessamum, even if his holding consists of "the poorer soil. He must seize the chance, poor as it is; if the "rainfall be good, but late, he will grow jowar, or late sessamum, "crops of less value."

In the great central zone of Upper Burma, which includes all the districts of the Minbu, Sagaing, and Meiktila divisions (except the Upper Chindwin and part of the Yamèthin district) and the southern portion of the Mandalay division, it seems to be a generally accepted theory that, in the absence of irrigation, there is one good, one moderate, and one bad harvest in every three years.

The chief crop wherever it can be grown is paddy, which is divided into the three main classes or varieties of *kaukgyi*, *kaukyin*, and *mayin*, to which *kaukti* is sometimes added. *Kaukgyi* is the late rain paddy. It is sown in the nurseries in June or July, transplanted in August, and reaped in December or January. It is in most places the principal and most valuable crop. *Kaukyin* is the early rain paddy, sown in April and reaped in July or August. It is grown on the lowest lands which are soonest flooded. *Kaukyin* is a form of *kauk-hlyin*, *i.e.*, quick-growing-rice.

Mayin is dry-weather paddy generally grown on lands from which floods are subsiding. It is sown in December or January and reaped in May, but in some districts is a month or more later. *Kaukti* is broadcasted in the early part of March, or transplanted from nurseries in the latter part of the month. It requires much water, growing as it does in the hottest months, though it is only three or four months in the ground.

The modes of cultivating paddy are broadly speaking similar to those followed in Lower Burma. The Burmans recognize infinite varieties of the rice plant: red, white, green, yellow, and black kinds, which again are subdivided into those with rough or smooth grain

and husk, long or short, round or flat, and each sub-variety has its special name. These cannot, however, be classified under the main heads given above, since many of the so-called varieties are common to two or more of them. The most practically useful division is probably into *mo-saba* or monsoon paddy and *nwe-saba*, hot or dry weather paddy. But even this is hardly accurate, for spring paddy produces the best outturn when it is in the field long enough to catch the early rains, and wet weather paddy receives no rain at all in the months of December and January. Where there is a real difference between the form of cultivation in Upper and Lower Burma, it is found in the case of irrigated paddy. Mr. Laurie in his Settlement Report of the Mandalay district says :—

"There is among agriculturists of irrigated land a consensus of opinion that rain is, weight for weight, more valuable than irrigational water; at certain stages in the growth of the paddy plant rain is particularly valuable. The cultivation of *kaukgyi* is carried on during the eight months June to January. There is usually irrigated water available by the month of May, occasionally even in the latter half of April.

"To moisten the soil properly for the first ploughing five inches of water are necessary. As the best land is ploughed and cross-ploughed eight times three or four additional supplies of water averaging five inches each have to be let in. Seed is sown or seedlings are transplanted, according to circumstances. On low-lying and favourably situated land seedlings are planted; on high land and land remote from the water-source seed is broad-casted, as on these lands the season of growth is shortened by the later arrival of the water-supply.

"The seedling nurseries are prepared about forty days before the date when ploughing ordinarily commences, and the young plants are removed and planted out when they have attained a height of from fifteen to eighteen inches. They are dibbled into the paddy-field, which has been plastered by frequent ploughing and watering.

"Four or five inches of water are supplied to the newly set plants, and from that time forward flushes of four inches at a time are let into the field when necessary. The interval between each watering varies from seven to ten days, a clear sky, a hot sun, and a drying wind being the causes that tend to shorten the intervals. When the plant is rank and shows a tendency to run to straw irrigation is temporarily excluded. It is on the very best classes of soil only that this expedient has to be resorted to. Rain, as distinct from, but in addition to, irrigational water is declared to be particularly valuable at two stages, namely, when the ear is first forming inside and when it is on the point of bursting out of its cover. The ear, once exposed to the air, does better without rain.

"In average *kaukgyi* the corn begins to fill about one hundred and thirteen days after planting; fourteen days later the ear is clear of its case, and after twenty-one days of growth in the open air it is ripe. The best *kaukgyi* paddy fills in one hundred and thirty-three days and ripens about thirty-five days later. The last dole of irrigation is given about twenty-five days before harvest, the field drying up gradually as the day for reaping approaches.

"The bulk of water which can be utilized by a six and a half months' crop favourably situated is therefore—

		Inches.
For ploughing ; five supplies of five inches	...	25
Watering ; five inches at a time, three and a half times a month, for four and a half months	...	79
Total	...	104

Kaukti aggregates ninety inches.

"If the average rainfall of twenty-three inches be distributed in the ratio of thirteen inches to the *kaukgyi* and ten inches to the *kaukti* season, these crops will be seen to require respectively one hundred and seventeen and one hundred inches of combined irrigation and rainfall, or in the aggregate two hundred and twelve inches per annum."

The Minbu district may be considered as very typical, for it is in the Dry Zone and it has land so situated as to exhibit nearly every form of cultivation practised in Upper Burma. Mr. O. S. Parsons, in his Settlement Report of 1897, classifies the various kinds of cultivation as follows :—

"(1) The cultivation of irrigated paddy-land (called *sèlè* or *sèye thauk-lè*—weir water drinking land) in the Man and Salin valleys.

"(2) Unirrigated paddy on what is called *indaing* land, *i.e.*, rough undulating country not unusally under close or constant cultivation. Such paddy cultivation is found in the hollows or in the lower plateaux of the *indaing*. It is dependent upon the rainfall and is called *mogaung-lè*.

"(3) *Mayin* paddy, grown on swampy land and irrigated.

"(4) *Tazè* paddy-land, *i.e.*, land subject to annual inundation by the Irrawaddy and depending on such inundation and the later rainfall for its productiveness.

"(5) *Ya*, or dry crop cultivation, or uplands or broken undulating land.

"(6) *Kyun* or *kaing* cultivation on alluvial lands skirting the Irrawaddy and the three inland rivers.

"(7) Garden cultivation."

Paddy is always cultivated on all fields if it is practicable. Sessamum is a very paying crop, but it is very precarious. It must have rain at the right time to swell the seed-pods, and it is rapidly burnt up by drought. In Minbu Mr. Parsons says sessamum is often sown to a small extent on the high level lands in the irrigated tracts as a first crop and is followed by *kaukyin* or *kauk-lat* paddy. Jowar often follows early sessamum and is a valuable crop, for jowar stalks form the principal fodder of cattle in the dry tracts. In fact jowar is often grown for fodder only. *Ya* cultivation everywhere is carried on in a slovenly and extravagant way, partly no doubt owing to the unlimited amount of land. Mr. Parsons says :—

"In the first place seed is bought, not kept over from last season's harvest. The cultivator's excuse is that it is not worth while keeping seed when he cannot foresee to what particular kind of seed next year's rains may be suitable. Secondly, the waste of cattle power is an important

matter: instead of tilling a small holding carefully, the agriculturist ploughs a large holding and scatters a considerable amount of seed over it. He obtains an outturn which is probably not greater than he could get from a plot of ground half the size, but well tilled, manured, and weeded."

Pyaung-bu or Indian corn, millet, sessamum, and the numerous varieties of peas and beans are grown wherever there is not enough water for paddy cultivation. The Burmese only eat such pulse crops when there is a scarcity of rice, though in some parts, such as the country between Myingyan and Meiktila, millet has almost become the regular food.

The various kinds of paddy-growing soils are distinguished by the Burmese under the names of *nôn*, *myewa-nôn* or *shun-nôn*, *hput-kyi*, *thè-nôn*, *thè*, and *myenet-si*. *Nôn* generally is alluvial mud; *myewa-nôn* is a yellow clayey loam; *shun-nôn* is a black humous loam; *hput-kyi* is calcareous and tends to crack widely in the hot weather; it is full of tiny land shells; *thè-nôn* is loam with an admixture of sand; *thè* is sand pure and simple, and *myenet-si* is what is usually called cotton soil, crumbly and full of holes in the dry weather and more like mud than clay in the wet. The amount of detritus washed down by the rivers and spread abroad during the season of floods, or by the irrigation canals, has enabled the same fields to be cultivated in many places with the same crops for hundreds of years without a fallow. It is only where lands cannot be regularly irrigated that rotation of crops is practised.

Until the reign of King Thibaw the irrigation weirs and canals were very carefully maintained. In old days, in districts such as Kyauksè, the rules were very strict. If a breach occurred and loss of revenue resulted, a sentence of death could be passed on the *Wun* of the district. The *Wun* therefore naturally, whether with explicit authority or not, arrogated to himself powers of life and death over the *sè-gyis* and *kan-ôks,* the men in charge of the weirs, canals and reservoirs. The *sègyis* in their turn apparently were not interfered with if they killed villagers who shirked working upon the irrigation works when called upon to do so. Orders exist from *Wuns* to their subordinates in which the weirsmen are threatened with death and crucifixion, if the repair of a breach is not completed by a certain date. Verisimilitude is given to the intimation by the announcement that the crucifix, if required, shall be built on the spot where the breach occurred, and that the bodies of the crucified shall be guarded from crows and vultures, so that the lesson may be enforced and the warning preserved for others for as long a time as possible. But in King Thibaw's time canals silted up, the mouths of channels widened into estuaries, weirs were knocked to pieces and swept away, and reservoirs burst.

Along the rivers the annual floods deposit quantities of alluvial silt. But the action of the river is capricious. The alluvial deposits do not as a rule extend farther inland than about half a mile from the river-bank, even where, on the Irrawaddy, the flood limit sometimes extends as much as six miles. After the subsidence of the annual flood the cultivator never knows what the river may have done for him. He may have a stretch of *ngôkleik*, accretion by alluvion, or a corner of his holding may have disappeared, or may have become a barren stretch of sand. The *in*, the broads, may have swollen or shrunk their limits. The thugyi may have to hold an annual re-distribution of the boundaries of the holdings. *Kaing-kyun*, island or riverain cultivation, is very miscellaneous. On rich loam, whether the surface be sand or soil, the cultivator grows tobacco, a plant whose broad leaves fit it for gathering dew, and whose roots strike deep down to moist layers of soil. On shallower soil of the same character he plants onions. On a soil with an admixture of sand he sows maize, a hardy crop, peas, chillies, or tomatoes. On soils which are still sandier, three or four crops; gourds, melons, peas, roselle (*chinbaung*), momordica (*kyethinga*) are grown together, and cultivation straggles and becomes irregular as the soil deteriorates. The varieties of peas and beans are very numerous: *pègyi, pènauk, pèlun, pèyin, sadawpè, pèngapè, pèbizat, kalapè*. The banks of the upper courses of many rivers become vegetable gardens which spread down as the water recedes. The extent covered may be realized from the fact that the Man, which in January runs sixty to ninety feet wide and two feet deep, swells in the rains to a river four hundred to six hundred feet wide and ten or twelve feet deep, while exceptional floods double these figures.

In many places the water is raised by lift so as to flow on to the fields. These are especially used where a river has high steep banks, or in places where natural hollows in the ground retain the water in sinks or broads (*in*) after the floods have gone down. There are four common kinds of lifts; the *kanwè*, or swing basket; the *ku* or *kumaung*, or trough lift; the *yit*, or water-wheel; and the *maung-let*, or bamboo lever. Wells are utilized by the same methods for irrigating purposes by market gardeners and keepers of orchards, and also by paddy cultivators, in some lagoons, where after the subsidence of the surface flood the water left behind remains suspended in the soil.

The *kanwè* or water-scoop is simply a long half-cylinder of bamboo matting with a long guiding handle. It is slung from the apex of three bamboos, stacked together like muskets, and is worked by hand. It may be seen at work in Egypt, as well as in India, Burma,

Siam, Tongking, and China. It is useful for lifting water from one field to another, but does not raise it more than eighteen inches, whereas a *ku* will raise it between three and four feet.

The water-lift, *ku* or *kumaung*, is therefore much more effective than the *kanwè* It is a long narrow trough, worked on a pivot. The worker stands on a small platform, often a single plank, or a mere pole, and brings his whole weight on to one end of the trough and thus sinks the other into the water. When his weight is removed the other end of the trough, which overhangs the field to be watered, is depressed by the weight of a stone, or lump of mud, placed there for the purpose. The water is thus tilted forward and runs through a hole in the trough. It is most frequently used to discharge water, led off from lakes or tanks, in distributary canals to the fields. Mr. Parsons says that one *ku* will serve on an average 4·15 acres and will irrigate ·81 acres in a day. Three flushes are required in a good year, six in a bad, and four in a normal year.

In raising water from a well the *maung-tôn*, or *maung-let*, is used on the same lever principle. A long bamboo working on the pivot of an upright post is used, with a heavy weight at one end and a bucket at the other. The bucket is lowered by hand, the weight at the end of the *maung-let* raises it up, and the water is tilted into a bamboo runnel.

The *yit* is an ordinary water-wheel with lengths of bamboo tied transversely opposite the floats. These act as buckets for lifting up the water and, as the wheel revolves with the current, are tilted so as to empty themselves into a trough or channel, which carries the water into the fields. In some places in the Shan States where the rivers have a deep channel, such as the Nam Tēng at Lüng Hkö, these wheels are forty or fifty feet high and raise water enough to form quite a considerable rivulet.

The ordinary farm implements are very simple. They consist of the *tun* or *tundôn*, a harrow, usually made by the farmer himself, with from four to seven teeth, made if possible of *padauk* or *dahat* wood; the *tè*, a very primitive plough, with a stock of teak, and a ploughshare of steel, or iron if made in the Shan States; a *kyandôn* or *kyanbaung*, or clod-crusher; a *pauk-tu*, a large hoe or mamootie; and a *tewin*, a long narrow spade like a ditcher's. The ground is first harrowed and cross-harrowed, then ploughed, then harrowed again, and then smoothed with the clod-crusher. In the river-flooded tracts, ploughing is occasionally dispensed with, and a herd of cattle is driven backwards and forwards in order to stir up and mix the soil. The *sutpyin*, a kind of sledge drawn by

a pair of bullocks and used for carrying paddy seedlings from the nurseries, is used only in *tazè* tracts, or similar places, where the nurseries are often a long way from the fields.

The betel-vine.

The betel-vine, or betel-pepper, is planted in February or March and lasts from four to seven years, the yield being largest in the fifth and sixth years. In the first year the leaf is not plucked at all, but, after that, once a month, in September, October, November and December. In those months at a single plucking four hundred vines will yield ten viss in the third and fourth years, and fifteen in the fifth or sixth years. The vines are trained on a lattice-work run along bamboos, which are set up in water-channels about three and a half feet apart. These trenches are called *myaungs* and are irrigated from wells. Between each pair of *myaungs* is a lattice-work overhead of split bamboos, on which leaves of the cocoanut palm are placed in order to bleach the betel-leaf by excluding the sun's rays. Each pair of *myaungs* constitutes a *kan*, and four hundred vines usually go to a *myaung*. The breadth of the *kan* does not vary, but the length is regulated in accordance with the capacity of the irrigating well. The labour of constructing a betel-vine garden is considerable, but when it is laid out it is permanent. When a plant ceases to bear leaves well it is cut down, and new plants are obtained by bringing down branches to the soil and earthing them over till they strike new roots. The vines are watered six times a month during the hot weather, four times a month during the three cold months, and whenever necessary during the rains. The produce is sold by weight and varies according to the season from eight annas to two rupees eight annas the ten viss. In most places the betel vineyards do not exceed half an acre in extent. By the side of each vine a post is planted, and it is the custom, when speaking of a betel-vineyard, to call it a "one thousand post" or a "five hundred post" plot. Two or three vines may be trailed on one post. When the vines cease to bear well a process called *kwe-thi* (literally, coiling) is performed. The posts are stripped of the vines, which are pulled down to the ground, and a new trench is dug between the existing trenches. The posts are then pulled up and planted by the sides of the new trenches and the vines are wound round them, a portion of each plant being laid in the bed of the new trench and earthed over. After two or three months this portion strikes new roots, and then the old roots are cut away and the old trenches filled up.

Areca palms.

The areca palm, or *kunthibin*, is stated to have been introduced by some Siamese travellers, who in the time of Alaungpaya brought the first specimens

from Chiengmai (Zimmè). The palms fruit in October and November. They are grown in nurseries, and are transplanted in from one to three years' time. The nurseries are shaded by pineapples, limes, plantains, or cocoanut palms planted for the purpose. The trees fruit in ten years, and last a lifetime if properly tended. They thrive best in ground made marshy by natural springs, but they are also grown along the banks of rivers, where water can be easily raised by lift. There are usually about twelve hundred trees to the acre, and the outturn of nuts for each tree varies from one to four hundred, accordingly as the year is favourable or not. The nuts are always trodden in a receptacle called an *indôn*, to give them a good colour, and are then dried in the sun on mats. The fresh pulled or wet nuts are sold at three rupees the basket, and about two hundred of them make up a viss of dried nuts, the rate for which is ordinarily five rupees for ten viss.

Sugarcane.

In most places sugarcane and tobacco are grown in small plots for home or local consumption only, but near the capital sugarcane is grown in some quantity. It is planted out from shoots in March and is cut in the following February. Sugarcane, when grown to any extent, is usually planted in the high-lying fields along the banks of canals and is set out in beds, and not in trenches between the beds as in Lower Burma. It requires four waterings a month for the first four months, but hardly any afterwards. The produce is from seven to eight thousand canes to the acre, and these are usually sold as they stand to Chinamen from Mandalay, who cut them and cart them away. In Mandalay the average rate is Rs. 25 for a thousand canes.

Tobacco.

Tobacco is grown in the Mandalay district on the best alluvial lands from December to May. The seed is sown in nurseries, the soil of which has been pulverized and usually manured The seedlings are ready for planting out in January, about ten weeks after sowing, and are set out in drills three feet apart and with the same interval between each plant in the drill. There are therefore between four and five thousand plants to the acre. Occasionally onions are planted between the rows, but this is usually considered bad husbandry, since it interferes with the necessary hoeing, weeding, and banking up. The seedlings are about six inches high when planted out; after about three months they have reached a height of eighteen inches and are pruned. The tops of the plants are docked and all suckers and buds are lopped off. These shoots are too bitter to be used for smoking, and are left on the ground. About ten weeks to three months after the lopping process the lowest leaves are matured.

They begin to curl and wrinkle, and, if left longer, become brittle and unsaleable. The middle leaves are considered the best; those at the top are apt to curl and wither; those at the bottom are dry and thin. The plant is stripped leaf by leaf as it ripens. From beginning to end there are three or four pluckings. After plucking the leaves are sun-dried for one day; shade-drying is believed to make them rank, black and unsaleable, contrary to the experience and practice of American, Manilla, and Sumatra planters. At Lüng Kö on the Nam Tēng in the Southern Shan States great quantities of tobacco are grown for export, and are sent long distances both east and west. Most of the above details are given by Mr. Laurie in the Mandalay Settlement Report. Mr. Parsons (Minbu Settlement) says that in some places, where the soil is covered with a layer of sand, the cultivator works a hole in the sand with a heavy iron bar (*din*) until the rich alluvial deposit underneath is reached. He fills the holes with good soil and plants a seedling in it. This is done in December or early in January. The plant instead of throwing out horizontal roots sends one tap root downwards, which fixes itself in the alluvial bottom.

Toddy palms.

Toddy palms are cultivated for the sap, of which jaggery or crude sugar is made. A man can climb from sixty to eighty trees. The working months are usually eight, from the beginning of March to October, but the times vary in different parts. During the four cold-weather months, however, little is done, for only a tree here and there will yield any juice in that season. The trees are of two kinds—*tan-bo* and *tan-ma*. The male trees are tapped first for the first four months and the *tan-ma* during the later months. The male trees yield considerably more than the female. The climbing of toddy-trees is not to be undertaken by every one, and the man who becomes skilled in it has no time for any other occupation.

Plantains.

Plantain trees are usually, says Mr. Parsons, "put down at "the end of the rains. The trees come to "maturity in a year and after fruiting are cut "down to make room for the younger shoots, *tha* or *sôn*, which "have begun to sprout round the parent stem. This process continues to the 'great-great-grand-children.' Each tree bears one "*hkaing*, or branch, and each branch bears five or six *pi*, or combs, "or bunches of plantains. In its second and third years a plantain "garden is said to be at its best, the yield having in the third "year doubled the yield of the first year; in the fourth year the "yield is stationary. After the fourth year the yield decreases, "and after 'great-great-grand-children' have fruited the soil is "exhausted, ploughed up, and either left fallow for a period, or devot-

"ed to some other purpose. The two chief varieties of plantains "are *ya-kaing* and *pi-gyan*."

Onions.

Onions are a very paying crop and are largely grown on *kaing* lands. Mr. Parsons says: "They are irrigated "from wells. A well costs about five rupees, "and seldom lasts for more than a year. The water is raised out "of the well by the *maung-let*, or bamboo lever: one well will "serve an average of four-fifths of an acre. The ground is ploughed "and carefully harrowed, and water-channels, connected with the "well by a main cutting, are dug all over it. The ground is next "laid out in beds, eight or nine feet long by four or five feet broad, "in which the seed-bulbs are put down in rows six inches apart, "with intervals of six inches between each bulb in the line. The "area irrigated by one well will take from a hundred and fifty to a "hundred and seventy-five viss of seed-bulbs. The months for "sowing are December and January. After the field is planted it "receives one flush of water and is then left unwatered for a month, "during which time, and until the crop is dug up in March and "April, it is carefully weeded. After the first month the field is "watered continuously. It takes a man from eight to ten days to "give a field one flush of water, and seven or eight such flushes are "required to bring the crop to maturity."

Wheat.

Mr. Parsons' notes on the cultivation of wheat in the Minbu district are of interest, since the extension of this crop would save the province much money. "It is sown in November and reaped in April. Two and-a-half "baskets of seed are required for an acre. It requires a loamy soil "with a minimum of sand in it and an over-layer of silt, the deeper "the better, in annually submerged lands. It is not manured nor "irrigated. Only one crop is grown in the year. It must be sown "when the rains are over, as a shower of rain will kill the young "crop. Land must be ploughed to a powder before the seed is "sown. It is generally ploughed before the river rises, and again "carefully when sowing is about to take place. The seed when "sown is covered with a layer of soil. The crop likes the sun. A "succession of cloudy days will injure it and help to develope the "blight known as *than-yaung*, rust. It is a paying but uncertain "crop, and the labour of preparing ground for it is hard. Its "greatest enemy here as elsewhere is rust."

Mixed crops and manure.

In the Dry Zone mixed cropping is often resorted to to guard against total failure. Two or more crops which require different conditions for complete success are sown. This is done in the Minbu district usually on *kaing* and *ya* lands. The necessity is rather pathetic and most often

implies too much industry and foresight for the *insouciant* Burman. Mr. Parsons says it is more usual in cotton fields than with other crops. In cotton cultivation it is usual to leave the plant in the ground for two years. The first crop may be a comparative failure, but the cotton plants are left in the ground on the chance of better luck in the second year. Meanwhile, another crop, say, sessamum, is sown.

Manuring is very seldom resorted to in the plains, though it is common in the hills. The reasons are twofold. It is too much trouble for the Burman, and he does not care to use his carts for such an unpleasant purpose; besides that they are not well adapted for it. Moreover, the upland fields are not ploughed till the first rains. The farmer then sows immediately after harrowing, and there is no time to manure. In irrigated land the cultivator doubts the necessity or advantage and believes that the surplus water would carry off most of the benefits of the manure to his neighbours' fields. Consequently the village cattle-pens only fructify their immediate neighbourhood.

Almost all cultivators have cattle of their own and do all their agricultural work themselves. But in a few districts where there are large holdings both labourers and cattle are occasionally hired. The rates of hire for cattle vary very greatly. In the Minbu district the rate in the northern half is, for one pair of buffaloes for the season, twenty-five to thirty baskets of paddy; for one yoke of oxen for the season, twenty baskets of paddy. In the southern half of the district the rates are respectively thirty-five to forty-five baskets, and twenty-five to thirty baskets of paddy. But the rate varies from year to year according to the greater or less number of cattle available. Mr. Parsons says: "Well-to-do agriculturists in "and near towns and the larger villages will hire labourers for trans-"planting seedlings, also for paddy-husking, but perhaps not so "commonly for reaping and threshing. The custom of co-opera-"tion among the peasantry at ploughing time and in the harvest "season is not prevalent. In small villages, however, where the "people are poor and the circumstances of every family are on "about the same level, mutual help is given in all agricultural ope-"rations, except of course in the ploughing season, at which time all "the cultivators are busily employed on their own lands. A field "labourer usually gets for the ploughing season (four months) "twenty rupees with his food, for the reaping and threshing season "(four months) fifteen rupees with his food."

In the Dry Zone nearly every one keeps a supply of food stored up in anticipation of failure of rain and consequent scarcity. Absolute famine therefore usually does not appear till the second year.

The wild food-stuffs most common in times of famine are: wild figs, *thapan-thi*; *put-so-u*, a creeper with an edible root; *zibin*, wild plums; *su-bôk-ywet*, the leaves of the *Acacia concinna*, used for curry; tamarind leaves and fruit; *kya-u*, water-lily root; *wet-myit-u*, sedge-root, found in swampy places; *pèbin*, a palm of which the pith is boiled and mashed; *myauk-u*, wild potatoes; *thamôn*, a kind of tree, of which there are two kinds, one "sweet" the other "bitter," the root being edible; *kywè*, a creeper with an edible root; *kazôn*, a kind of sweet-potato plant of which the stem is eaten; *tazaung pyathat*, a plant of which the stem is eaten: *mônbin*, the fruit of the "bread-fruit" tree; plantain stem and root; papaya stem; *kaukkwè*, the berry of a species of tree; bamboo seed (the bamboo often seeds in famine years); *legwa*, a grass seed; and oil-cakes.

Insect pests and cattle disease.

Mr. Parsons notes the following insect pests. Fortunately these are uncommon, except in years when the rainfall is good:—

"*Paddy*—(*1*) *Sitpo* or *asitpo*, a small soft yellow caterpillar which attacks the paddy-crop shortly before it arrives at maturity, generally in November-December. It lives in the plant and eats up the heart. This is the worst insect enemy the paddy-cultivator has. It is about an inch long.

(2) "The *gôk-po* and *yin-po* also are destructive.

(3) "*Ngamaung daung*, also called *Nga hmyaung daung*, a large green caterpillar which usually appears in September-October and attacks paddy seedlings, young peas, and often sessamum. It destroys the whole plant, leaves as well as stalk. It is of a grayish-green colour, yellow underneath, and has two yellow and black stripes down the back. The cultivator says that the mature insect is the size of a man's finger, and that its colour is then a vivid green.

"(4) *Po-hnan-gaung* is a small green grasshopper, which usually appears in November and December and destroys the ears of paddy as they are forming, that is, while the grain is till soft. This insect does not do much harm. It is said to confine itself to paddy.

"*Island crops*—(1) *Ku-mwe-sôk*, a soft hairy caterpillar, gray in colour, which destroys the leaves and blossoms of peas in November-December. This insect caused great damage to the island crops in 1893. It is the worst enemy of the *kaing* or *kyun*

cultivator. After it comes the *nga-maung-daung*, which has already been described.

"Rust (*thanyaung*) is the greatest scourge of the wheat cultivator; cloudy weather is said to be favourable to its development.

"Onions are liable to suffer from diseases known as *tauktèmi*, or tucktoo's tail (so called from the speckled appearance the leaves assume), and *mi-sut*, and *pya-pet*."

Epidemics of cattle-disease sweep over the country and carry off enormous numbers of cattle. Rinderpest, epizootic aphtha, and anthrax are the most deadly, and no effectual protective measures have yet been discovered. Mr. Parsons gives the following indigenous remedies:—"For *kyauk pauk-na* (rinderpest) no effectual remedy is known; segregation is practised. Ginger and eye-medicine are used and toddy given to drink.

"For foot-and-mouth disease (*kwa-na hlya-na*), which, though not necessarily fatal, emaciates and enfeebles the cattle, a bolus of *ngapi* and salt is administered internally, or rubbed in strong solutions into the hoof; the cattle are made to walk about in water, or on hot sand. Earth-oil is applied to the sores when maggots appear. Ripe tamarind fruit mixed with salt is also given as a pill to open the bowels. The tongue is also scraped clean.

"*Gyeik-na* [a form of anthrax called malignant sore-throat] sometimes attacks the cattle. The neck swells, blood is vomited, and the disease proves suddenly fatal. Sessamum-oil is administered internally, and also sometimes dried tobacco-leaf pounded in water. The disease is commonest in the hot-weather.

"*Daung-than* (or *dan*)-*na* [a form of anthrax resembling rheumatic fever] follows rain and exposure. The animal trembles and straddles its legs, and the illness is fatal if not treated. The treatment consists in striking the animal with backward strokes of tamarind twigs. Mango leaves are given internally."

Size of farms.

As a rule holdings in Upper Burma, as in Lower Burma, are small, seldom exceeding a score of acres, but here and there large farms are found running to hundreds of acres, and in a few cases to upwards of a thousand. These, however, appear to be the exception. Mr. Parsons in his Minbu Settlement Report says: "The large landed proprietors "in Salin are known as *thugaungs* (သူဂေါင်း). There is no history "connected with the estates of these men. They have been gradu-"ally acquired in the course of generations by purchase or mort-"gage. The *thugaungs* have gradually come to consider them-"selves and to be looked upon by the people as a separate class. "They intermarry among themselves and live in groups of families

"in superior houses surrounded by high fences, which present rather "the appearance of small stockades. They expect more from their "tenants than do smaller landlords, but then more is more willingly "conceded them on account of their position, both agricultural and "social. A few of the more influential of these landlords expect "their tenants to furnish them with fuel, to help to repair their "houses, assist as servants at ceremonials, and occasionally to act "as night watchmen in their compounds. Some of the tenants "who perform such duties receive board and lodging in the com-"pound. There are, on the whole, as yet no abuses in the relations "between these landlords and their tenants of such a nature as to "call for legal protection. As for the rest of the district, large "landed proprietors treat their tenants with leniency. There are "no abuses such as rack-renting or capricious unjust evictions.

"The contract entered into between proprietor and tenant speci-"fies the proportion of the working expenses which the landlord or "the tenant shall defray, and the proportion in which the produce "shall be shared at harvest time. The tenant finds the cattle and "is himself the ploughman.

"Tenants are of three kinds—

"(1) The *asu-cha* tenant, who bears all the cost of cultiva-"tion and pays the land-owner as rent a fractional "share of the gross produce of the land. In this "group falls also the tenant or occupier of State "land.

"(2) The *kôn-hpet*, or partner tenant, who bears a portion "only of the expenses of cultivation and pays as rent "a portion of the gross produce.

"(3) The *asu-pônthè* tenant, who pays a fixed rent in kind "and bears all the expenses of cultivation. There "are very few instances of this kind of tenancy."

In the irrigated paddy tracts the payment of water-rate and the expenses of seed and harvest are matters for private arrangement. Sometimes these items are debited to the tenant, sometimes to the proprietor. On the best irrigated land the tenant can afford to pay all expenses, the landlord paying half or the whole of the water-rate, and the landlord gets half the crop as rent. On somewhat poorer land the landlord will furnish half the seed besides paying the water-rate, or will furnish all the seed and pay half the water-rate, and take as rent half the outturn. On yet poorer land the landlord receives only one-third of the crop, working expenses being arranged according to circumstances. The lowest rent received on irrigated paddy-land is one-fifth of the gross produce.

Tenants of *mogaung-lè* (rain paddy-land) pay, according to the productive capability of the land, one-fifth or one-fourth of the produce, or, if the landlord supply the seed, one half.

Tenants of *tazè*, that is, river-flooded paddy-lands, pay from one-tenth to one-fifth, or one-fourth of the produce, according to the quality of the land, and the tenant provides everything.

On *ya* lands the landlord does not as a rule supply his tenant with seed. The rent is usually one-fifth, one-seventh, or one-tenth of the produce. In a very few instances fixed rent is taken. Tenants on *ya* land are uncommon.

Kaing lands are usually let for half the produce, the landlord supplying the seed. A few fixed rents in kind are found.

Mr. Maxwell Laurie says :—

"In the Minbu district the occupancy rights of a holding rest entirely in the proprietor. When the landed proprietor has more lands than he can conveniently work, or when he does not care to undertake the trouble of personal supervision of agricultural operations, he hires a cultivator who engages to work the land on such terms as may be agreed upon. But however lasting may be the connection between landlord and tenant, and however frequently the annual engagement be renewed, the tenant does not acquire any right approximating to an occupancy right. The state of affairs is practically the same as exists almost universally in England, and it would be unnecessary to describe the system here were it not for the existence in other parts of India of proprietary rights of all degrees of validity, shared by landlord and tenant in varying proportions, in accordance with local prescription or legal enactment.

"The owner of land has in Upper Burma proprietary rights of the completest and most indefeasible sort; the tenant is merely a cultivator, who contracts for one year to work the land on condition of receiving a certain share of the produce.

"There are many owners who from age, indolence, or sense of position, annually give their farms out to tenants, and there is a large and respectable class of cattle-owning peasants, who are not themselves proprietors of land and are willing to place their services at the disposal of landed proprietors. There is thus free competition on both sides. The landed proprietor must look round for a tenant, the tenant must look round for an employer. The tenant is absolutely free from responsiblity as regards the payment of taxation ; any obligation he contracts being, not with Government, but with the land-owner."

Agriculture in the hills.

Shan cultivation, which is that of the hills generally, is described by Mr. W. R. Hillier, who was for some time in charge of an experimental farm at Lashio in the Northern Shan States.

The following is adapted from his memorandum : Roughly there are two systems of agriculture, namely, that under which crops are raised under irrigation, and that under which crops are cultivated

and raised without irrigation, or, in short, lowland cultivation, or *na*, and high-land cultivation, or *hai*.

Na cultivation.—The crop cultivated under this system is paddy, and the general method of cultivation is very much the same as it is throughout Burma. The valleys that can without much difficulty be brought under irrigation are selected and divided off into a series of beds, generally in terraces, so that the evil effects of stagnation, so very prominent in the cultivation of this staple in Burma and other countries, are rarely met with here. The water used to irrigate the crop is constantly in motion, flowing from the higher to the lower terraces.

The tillage of the land is effected by a very rudimentary implement, the Shan plough, which in reality is nothing more than a grubber. It is, however, much superior to the ordinary plough of the Indian ryot, though there are many points in which they are alike defective. The Shan plough has a good, substantial cast-iron triangular bit in front, measuring five inches at the top and tapering to a point. The surface of resistance is very large and the draught of the plough therefore much greater than it ought to be for the weight of the implement. The soil is partially inverted and the furrow is triangular instead of square. Buffaloes are the only animals used for draught purposes, and only one of these animals is yoked to the plough, and not two, as in India and Burma. Both bull and cow buffaloes are worked. The land is flooded and then tilled and worked into a puddle with the plough, after which a harrow, made entirely of wood, is dragged backwards and forwards till the surface of the bed is fairly level.

In most parts of the Shan States there are only two crops, the early and the late; but in some States, such as Lai Hka, Hsi Paw, and South Hsen Wi, three crops are recognized, corresponding to the *mayin*, *kauk-yin*, and *kauk-gyi*. These are the *hkao sao*, or early crop, sown in March and April; the *hkao kang* or middle rice, sown in May and June; and the *hkao lông*, or great crop, sown in July and August. The first is entirely watered by irrigation; the other two are largely dependent on the rains. Only one crop is got off a piece of land in the year, and after being cropped for three years it is a common custom to abandon it for a year or so to enable it to regain some of its fertility. The difference between this and systematic fallowing is that in the one case the land is simply left to itself and in the other, though the land is not cropped, it is frequently ploughed and stirred so as to expose the soil to the action of the atmosphere.

The crop is generally sown broadcast. Sometimes the seed is steeped and allowed to germinate before sowing. In the more ex-

tensive paddy growing neighbourhoods the Burmese plan of sowing in nurseries and then transplanting is adopted. Both systems have their drawbacks. In broadcasting the seed is sown very irregularly, and in the nursery system there is a great waste of labour in transplanting. The field when once sown has nothing more done to it except irrigation at regular intervals. As in Burma, many varieties of the rice plant are recognized, the main differences being the same: colour, length of grain, and speed of growth. The *hkao-lông* like the *kaukgyi*, is the most slow-growing. The crop is reaped with small sickles which have a serrated edge. Generally only the ears are cut off, and the straw is left to stand in the fields till it is eaten by cattle, is burnt, or rots. The ears are tied in bundles and then threshed on the fields by men and women. The grain is collected and winnowed by raising a platform and pouring the grain down. The wind carries off all the chaff and light grain. The winnowed grain is then stored in bamboo-framed granaries lined with mats.

Manures are seldom or never used in wet cultivation. The only return made to the soil is the detritus carried down from the hill slopes and the burning or rotting of the straw on the fields. Green leaves and small branches are sometimes spread on the field and ploughed in, but only in cases where the soil is very dense. The civil war which prevailed for years before the occupation has thrown enormous stretches out of cultivation, and the water-channels have been choked up. Water-wheels for lifting the water are far less common than they used to be, but are found here and there all over the States. As a rule it is only the Shans who cultivate the low land, but the Kachins and La'hu and other hill tribes all carry it on where they can get the land. The yield varies very greatly. In some places one hundred fold is confidently looked for. From forty to sixty fold is an ordinary yield.

Hai cultivation.—Rice is also the main crop grown on the uplands. The place most generally chosen is a piece of forest land situated on the slopes of a hill, or in undulating country. The grass is burnt and the land ploughed and harrowed in the same way as in the lowland fields. The trees are then ringed to kill them, and the branches are lopped off and heaped round the trunks of the trees and, when sufficiently dry to burn, these heaps are fired, usually just before the first rains are expected. The heat kills the trees, if the ringing has not already done so. The ashes are then distributed over the fields and the harrow dragged over them once more. Stubble, leaves, and branches are then distributed over the field in small heaps, and loose earth is then worked with hand-rakes over these heaps. When this is done, the leaves and stubble be-

low are set on fire and the earth above is thoroughly burnt and becomes brick-red. The heaps are then again spread out and the seed sown when the rains begin. Shans, Rumai (Palaungs), Kachins, La'hu (Muhsö), Akha (Kaw), Wa, Mêng, and other races cultivate the highlands alike, but the greatest proportion is done by the Wa, La'hu, Palaungs, and Kachins, of whom the first three races seem to cut down much heavier tree jungle than the others, and are much the most hard-working and industrious. Cultivation under this system is exceedingly hard and laborious, and is never permanent. The land thus cultivated yields good crops for a longer or shorter period in various places, averaging perhaps four years, and then it is abandoned and the village moves elsewhere. The process of burning the soil is most exhaustive and ruinous. The organic matter in the earth is volatilized and the ash constituents only are left, in a highly soluble condition. The available plant food is thus for the first four years freely taken up by the crop, which year by year becomes less, in proportion to the amount which has been taken by the previous crop. Moreover, as the land is usually situated at a considerable elevation, a great quantity of the fertilizing matter is carried away by surface drainage.

The staples grown under this system are rice, by nearly all the hill races; maize, Indian-corn, and buck-wheat by the Miao'tsu and the more Chinese races; peas and beans by the Wa; poppy by the La'hu and the Wa in enormous quantities; and by the others, for local consumption; cotton, sessamum, tobacco, and gourds. The seed is sown broadcast, and the reaping and threshing is carried on in the same way as in lowland fields. The yield varies enormously according to the character of the soil and the time it has been under cultivation, but it is seldom below twentyfold and frequently rises to sixty.

In the more open, downlike country such as prevails in the Myelat and about Tang Yan and Möng Keng in South Hsen-wi, where the surface has been so thoroughly deforested many years ago that little remains but grass, and irrigation is in most parts impossible, a different form of *hai* cultivation prevails, and manure, which might advantageously be used everywhere, replaces the wood-ash. The process is briefly as follows,—At the end of the rains the piece of land to be cropped next season is ploughed up and is left till February or March, when it is broken up with a hoe. The soil is gathered up into little mounds a foot and a half apart, in the centre of which are placed cakes of byre and stable manure and the grass and other rubbish taken out of the soil. Each heap is then set fire to. If it rains after the heaps are made up and before they are burnt, the work has to be done over again, and, should rain come a

second time before the heaps have been burnt, the cultivation of that particular plot has to be abandoned altogether. After they have been burnt the heaps are left until the first squalls and heavy winds are over, which would blow away the ashes, and are then thoroughly raked in over the field. The paddy is then sown broadcast. The yield varies from twelve to twenty baskets for each basket of paddy sown, and fields have to be left fallow every second or third year; the amount of paddy obtained is seldom sufficient for local consumption. A similar form of cultivation, called *lè-pôk*, is carried on in the Mogaung neighbourhood and in other parts of Upper Burma, where there is a lack of water. It is really a form of *taungya* or *hai* cultivation in the plains instead of in the hills. Except that no manure appears to be used and that the fields are afterwards left fallow for a much longer term, the procedure is the same as in the Myelat. The crop is reaped about December.

Garden crops are raised in very much the same way as the crops in the highland fields, except that cattle manure and ashes are always freely used. The main crops are onions, yams, brinjals, indigo, maize, sugarcane, millet, beans, Indian-corn, and the like.

The orange grows in many parts of the Shan States along the Salween and some of the streams running into it. Those of Katu Awn (Kadugale) in the Mawkmai State are particularly fine, and are hardly surpassed anywhere. In other parts the fruit is much smaller, hardly exceeding the size of a blood orange, and the quality varies a good deal, but there is always a sale for the produce of the various groves. Other fruits are mostly inferior. Except in Mawkmai, the mangoes grown are very coarse; papayas, jack-fruit, and bael fruit are found in most of the wider valleys, and crab-apples, wild plums, peaches, and pears are common, but hardly eatable. Pine-apples are grown in large quantities in many parts, particularly on the slopes above the Nam Pilu, running out of the Yawng Hwe lake. Wild raspberries are found in most parts of the States and are, next to the oranges, the best fruit in the country. Walnuts are only found in the Wild Wa country.

Tea.

The chief special crop is tea. The plant appears to be indigenous, and wild tea shrubs are found all over the hills. It is cultivated in Loi Lông (Taungbaing) and also in the Pēt Kang district of Kēngtūng, as well as in a few other places in the same State, but the tea leaves of the latter neighbourhood have no great reputation and do not appear to be exported west of the Salween. The Loi Lông or Tawng Peng State is a mass of hills, ranging about six thousand feet above sea level, and little else but tea is grown on them. The soil is a dark, brown, clayey loam of considerable depth, and covered on the sur-

face with large quantities of decaying vegetable matter. The tea shrub or tree grows with one stem often thick enough to be called a trunk, luxuriates in the shade, and has a leaf of about nine inches in length when fully developed. It does not stand much pruning. For a plantation pieces of land covered with dense forest are usually chosen. Blue oak, or shrub jungle, is said to be the best, and land covered with pine forest is seldom chosen. The gardens are almost invariably situated on the slopes of the hills. The ridge is left under jungle and both slopes are planted nearly down to the foot. In some places these slopes are almost precipitous, and on such slopes the plants are usually much smaller and have many blanks from the dying off of trees. The gardens are not laid out on any system, but are planted quite at random. The seed is collected in November, and sown in nurseries in February or later. They are kept there till they are about two feet high, generally in the second year, and are then planted out in August and September on the cleared and burnt slopes. No manure is used, but the plants are freely watered during the dry season. Weeding is only done before the rains and after October, when the ground is often dug up with country hoes. The trees are never pruned, either to a special shape or to regular dimensions, but are allowed to grow and straggle freely. The Palaungs say the plants die off if they are pruned. Vacant places in a garden are filled up every year. Each cultivator has his separate small garden, and there are no large plantations worked by capitalists or by the united labour of a village.

The plants are first picked in the fourth year, and seem to continue bearing to ten or twelve years. Three crops are recognized, which extend from the month of March to the end of October. This also seems to represent the number of flushes. The middle crop, or picking, between the months of May and July, is considered the best and makes the best tea, which is called *swe pe*. The picking seems to be carried on quite at random; any and all kinds of leaves are picked. The first crop, which is said to be coarse, is generally manufactured into pickled or wet tea, called by the Shans *neng yam* (ၼိင်ယမ်), and by the Burmese *letpet* or *lapet*. After picking, the leaves are spread out on trays and laid for two or three days in the sun to be dried, and are then steamed. This is done in wooden jars which have a false bottom of bamboo grating. A cauldron, also of wood, is cemented on to a round iron plate, which is laid on the top of an oven, cone-shaped and made of earth or bricks. A sloping excavation under the oven serves for a furnace. When the water in the cauldron is at boiling pitch, the steaming jar is fitted tightly into the neck of the cauldron, so that the steam rises to the leaves through the bamboo grating and removes a cer-

tain amount of tannin and glucose moisture. The compressed leaves are then thrown into pits or small masonry wells and are weighted down. There they ferment and the result is the salad or pickled tea. There does not seem to be any limit to the time that the tea will keep in these pits.

The middle or *swè pe* crop is generally converted into dry tea. The flushes are steamed over night and the next morning the leaves are compressed and rolled and then loosened and spread out on bamboo mats to dry in the sun. While drying the leaves are rolled three or four times during the day. When perfectly dry it is *letpet-chauk* (dry tea) and is collected and stored away in baskets. Much of the dry tea goes to Western Yünnan; all the salad tea goes to Burma. In Loi Lông wet tea averages from ten rupees to twenty-five rupees the hundred viss; in Mandalay from forty rupees to sixty rupees. The dry tea ranges from sixty rupees to eighty rupees in Loi Lông, and in Mandalay from one hundred and fifty rupees to two hundred rupees the hundred viss.

Mr. R. C. Wright, a Ceylon tea-planter, remarks of the Tawng Peng tea—

"It is good Manipuri *jat*, dark leaf, the trees being about twelve feet high. They keep them down to about that height by cropping the tops off. There are some trees about twenty feet high. I saw one tree the stem of which measured three feet in diameter. There is also a magnificent tree on the top of a hill, and about thirty feet high, which the natives have covered with gold leaf, surrounded with a wall, which they worship." (As to this tree see *sub voc.* Tawng Peng.) "Some of the bushes are good, but as a rule are cut and hacked about and spoiled for tea-bearing purposes. It is all one *jat*, Manipuri, which is the wild tea of Burma. From what I could see, if it were properly cultivated, it would be very good tea and of very fine quality."

Opium.

The great bulk of the opium produced in the Shan States comes from the Trans-Salween States and particularly from those on the Chinese border. In Ko Kang and in almost all the Wa States the poppy is the chief crop. West of the Salween large quantities are grown on the mountain tract of Loi Maw, in the Möng Ma or Hsen Lem district of South Hsen Wi; on the ranges of Loi Sè and Loi Lan in West Mang Lön; and generally on all the hills rising over four thousand feet, where there are Kachins, Palaungs, La'hu, or other hill tribes. The poppy seems to grow freely enough below four thousand feet, but the opium is said to be inferior, whether in flavour or strength is not clear. For this reason the poppy is not cultivated by the Shans, even when they are opium-smokers. The poppy cultivated seems to be most like the *Papaver officinale* with white flowers, solitary flower-stalks, somewhat ovate capsules, and white seeds, but it is usually

called the *Papaver somniferum*, which has generally red or violet-coloured flowers, numerous flower-stalks rising together, globose capsules, and black seeds. The *Papaver somniferum* is generally cultivated in the mountainous parts of the North of India, and the *Papaver officinale* in the plains of Bengal, where the poppy fields are described by Dr. Hooker as resembling green lakes studded with white water-lilies. In the Shan Hills it is the hills that are so clad, at any rate in the Wa States, where miles of slopes are covered with the poppy. Elsewhere the fields climb up steep ravines and follow the sheltered sides of ridges, but everywhere the crops seem to thrive best on the steepest ground, and everywhere white blossoms predominate, though in almost every field there are a few scattered coloured heads which fleck the snowy sheet. There are two kinds of white, a dead matt white, and a ribbed corolla which has a slight gloss on it. Some of the petals are tipped with red; others are wine-red, purple, and purple turned up with red. No botanist has yet determined the species or the variety, for some botanists deny that the species are different.

The poppy is everywhere a very delicate plant and is peculiarly liable to injury from insects, wind, hail, or unseasonable rain. The crop is therefore always a very hazardous one, and the produce seldom agrees with the true average, but commonly runs in extremes. While one cultivator is disappointed, another reaps immense gain. One season does not pay the labours of the culture; another, peculiarly fortunate, enriches all the cultivators. If this is the case in Patna, Malwa, and Benares, it is much more so in the Shan States, where the plants seldom grow to more than two or three feet in height, and the capsules average the size of the bazaar egg rather than that of the Dorking, to say nothing of the human fist, variable in size though that is. The seed is sown in November, the plant sprouts early in January, and flowers at the end of the month or in the beginning of February, and the sap is collected in March or April. This is done in the usual way; the pods are gashed with a double or triple bladed knife (the *nushtur* of India) in the early morning, and on the following morning the sap is scraped off and stored on plantain leaves. The great Wa cultivators are fond of using old kelts for this purpose, instead of the scoop, the *sittuha* of India. None of the tribes, so far as is known, prepare or inspissate the opium in any way. It is smoked as it is gathered. The La'hu and Wa use a pipe, which, if not exactly the same, is very like the *yen-tsiang*, the orthodox smoking pistol of the Chinaman, and they smoke reclining on a mat. Many of the Shans, Kachins, and Palaungs smoke in ordinary metal or clay pipes, sitting up or even walking about. In such cases the opium is always mixed with, or rather

saturated into, chopped, dried plantain leaves. In every case, however, the opium is much milder than even the "black commodity" or "black earth" grown by the Chinese, which is far below the "foreign medicine" of Malwa or Benares both in potency and flavour.

Opium is undoubtedly the chief crop in Ko Kang and in all the wilder parts of the Shan States. The late Mr. Baber estimated the poppy-fields of Yün-nan at one-third of the entire cultivation. Those of Ko Kang and the Wild Wa communities extend to considerably over two-thirds. Every Chinese village in Ko Kang, and every Wa village in Hsung Ramang, Ngek Lek, or Loi Lön has its fifty, one hundred, four hundred, eight hundred acres of poppy, and its modest twenty or forty acre field of hill-rice or Indian-corn, buckwheat or beans. The average return in Ko Kang is said to be one and a third viss to the acre, or four *catties*, say, roughly, from four to five pounds. This compares badly with the thirteen pounds said to be regularly obtained from the Patna, Benares, and Malwa fields and still worse with the fifty-six pounds of opium which it is recorded that a Mr. Young of Edinburgh obtained from his one acre of poppy, but it seems to pay for the labour, for in 1892 it was estimated that about one thousand acres were under poppy in Ko Kang, and there must be very much more than this in the Wa States. Almost all this opium goes to China. Very little crosses the Salween, but from the Wa States a certain amount makes its way southwards to Kēngtūng and beyond. It is to be noted that there are no victims of opium in these opium-producing districts, any more than there are in Ssu-ch'uan, where the people are the wealthiest in China and half the crops are poppy. It is only in places where opium is prohibitive in price that there are victims to opium. There, to buy his opium, the poor man must starve himself. He dies of want and opium is blamed. Where opium is cheap the people are healthy and stalwart. East of the Salween the universal opinion of opium is that of the Turk, who stamps on his opium lozenges *Mash Allah*, the gift of God. Some of the Wa eat as well as smoke opium, but so far as is known eating opium is rare, and none of the races drink it in the form of an emulsion like the *kusumba* of the Rajputs.

In ordinary years a viss of opium may be bought in the Kokang poppy-fields for six rupees. The average price in the bazaars is nine or ten rupees. The same rates are believed to prevail in the Wa States, but the prices fluctuate everywhere a good deal with the character of the harvest.

West of the Salween Loi Maw is the only place where opium is systematically grown for profit. There are about four thousand

pounds of opium produced there on an average in the year, and the price ranges from twelve to fifteen rupees the viss. The cultivators are all Chinamen.

The Kachins, Palaungs, Lihsaw, La'hu, Akha, and others who grow the poppy do so only for the consumption of their household or for the immediate neighbourhood. Their poppy patches vary from the size of a pig-stye to that of the ordinary country churchyard. Some villages have about an acre in all, some three or four. West of the Salween the European cant about opium has penetrated. A Shan either tells deliberate lies or says he only smokes when he has fever. The Palaung is pious and hypocritical and says his opium is intended for his ponies or for cases of malarial fever. The Kachin, who is a rude, defiant man, puffs the smoke in your face and says it is a change from tobacco. The La'hu and the Àkha and the remoter races generally, who are too uncivilized and ignorant to know how to tell lies or to dissimulate, say they smoke opium because it is the best thing for their health that they know of.

Famines.

There was considerable distress in Upper Burma in the year 1891-92. For the previous five years the people had suffered much; at first from the depredations of rebels and dacoits and subsequently from a series of bad harvests caused by deficient rainfall.

There was a very general failure of crops throughout the Dry Zone, the belt of country lying between the twentieth and twenty-second parallels of latitude, and the result was a total or partial failure of crops in the Meiktila, Yamèthin, Shwebo, and Lower Chindwin districts, as well as in Myingyan, Sagaing, Magwe, and Minbu. There was not a single death from starvation reported, but there was much distress shown by emigration, forced sales of cattle to procure food, and the resort on the part of the poorer classes to roots as a means of subsistence. Relief works, consisting of roads, irrigation works, the Meiktila Branch Railway, were opened wherever necessary, and at the same time advances were liberally given to cultivators to enable them to buy seed and to keep their cattle. The total expenditure incurred on famine relief up to the end of 1891-92 was Rs. 10,11,275; the total remission or suspension of revenue granted was Rs. 7,84,000; the total amount of agricultural advances made was Rs. 4,11,558.

In the following year the rainfall was better, and relief works were only necessary in the Wundwin subdivision of the Meiktila district, and in 1893-94 a good rainfall ensured heavy crops almost everywhere.

Light rainfall, which was moreover badly distributed, in 1896, led to scarcity again in 1897 through failure of the crops, and relief

works had to be opened again in the Yamèthin, Meiktila, and Myingyan districts, but the emigration of great numbers to work on the Mandalay-Kunlông Railway and on the Mandalay canal prevented the famine from becoming dangerously acute. Neither of these famines, however, were extensive, or resulted in anything beyond great distress. There was practically no loss of life, and it seems probable that this will be the rule. It was very different under native rule, and the people of Meiktila, Myingyan, and Magwe talk of the great famine of the early years of the century, when people in these districts died in thousands of sheer want.

Agricultural experiments.

Agricultural experiments have been made at different times with wheat and maize, tobacco, English vegetable seeds, and the like in various districts of Upper Burma with occasionally gratifying success as regards possibilities, but without much result in inducing the people to try new crops. The want of an immediate market and the deep-seated conservatism of the Burmese farmer present considerable obstacles. The agricultural shows which have been held in many places with the intention of inspiring enthusiasm have been almost equally disconcerting.

Sometimes the Burman regarded them as a sort of curiosity show; elsewhere as a cunning scheme for increasing revenue by the discovery of the best stock and the heaviest crops; mostly with the enthusiasm which ladies have for fancy bazaars, as a harmless sort of a fête with no religious obligations; never in the spirit desired by the department of agriculture.

An experimental farm was established in the Northern Shan States at Lashio and was carried on for about four years under the direction of an officer who had received a special training. Fair success was obtained with a variety of produce and in the rearing of stock, but the growing of wheat, which was its chief object, was not a success, and the remoteness of the locality in which it was situated rendered it unsuitable as a demonstration farm. It was therefore abandoned without having effected much in the way of educating the people.

In the Southern Shan States, however, Mr. Hildebrand has succeeded in inducing some cultivators to grow wheat, and the production of potatoes is steadily increasing. English fruit trees and vegetables have also been introduced and are found to grow well, but the want of an extended market tends to make the Shans regard such cultivation rather as a personal compliment to the Superintendent than as a means of making profit for themselves. They were confirmed in this opinion by the reluctance of the Military Commissariat to buy the Shan-grown wheat.

PLATE XXIX.



Photo-Block. Survey of India Offices, Calcutta, 1899.

AKHA MEN.

The growing of potatoes, however, is extending rapidly, and with improved roads the whole of Burma seems likely to be supplied from the Myelat.

Mr. G. F. Arnold writes as follows on cotton and its manufacture in Burma. The portions applicable to Upper Burma are here quoted or adapted from his monograph.

Cotton.

"Who first brought the cotton-seed to Burma, from what land it came, at what date it was sown, no one can now say. All that is told of its origin belongs to legend—to the dim era when the historian and the poet were one, and his fables had not yet been touched by rudest criticism. At such a time each craft has some deity for its patron, and the Shans tell how eight Brahmas, four male and four female, came down long since from above and eating of the earth became human; denied a return to heaven, they took up their dwelling in Burma, and multiplying there introduced among its people the cultivation of cotton and the arts of spinning and weaving.

"Or again, coming nearer to earth, they relate of a mythical *sao maha* that brought these arts into Burma from China, thereby pointing to the east rather than the west as their home.

"It is unlikely, however, that this is correct; the earliest notices that we have of cotton all connect it with India, and the statement of two Arabian travellers is quoted by Dr. Royle that in the ninth century the Chinese did not dress in cotton as the Arabians. But it was from India that the culture of cotton spread into Arabia; hence it is probable that the Burmans also derived their knowledge from the same country rather than from their eastern neighbours.

"But whether it was from east or west that they came there can be little doubt, that these industries were familiar to the Burmans at an early date. There is a story of Ma Shwe U, who was carried away from her loom by a tiger ridden by the Nat Shwe Byin during the reign of Anawrahta. The Pyus and Pyons, aboriginal races, are said to have used cotton before the influx of foreigners from Central India, and some believe it to be an indigenous plant,—a sure sign of its antiquity when all efforts have failed to trace it back to its first source.

"Long as cotton has been cultivated and spinning and weaving have flourished in Burma, no recorded modifications in their practice can be ascertained.

"All that can be said is that, so far as we can trace, the same instruments have been used and the same methods employed as at the present time, but that the cotton industry is now on the decline.

"Cotton is cultivated in almost every district in Upper Burma, and in about half the Lower Burma districts. In most of the latter only very little is now, grown, in out-of-the-way parts for home consumption, and the area of cultivation is yearly contracting. Since cotton goods are now imported in such large quantities in most parts, cotton-weaving has become more a pastime than an industry, the weaving being done by the daughters and wives, who supply the household raiment, but seldom offer any articles for sale. In Upper Burma the conditions are slightly different. In some districts, *e.g.*,

in Meiktila and Myingyan, cotton is grown largely and exported raw to China and India; there are also more weavers, men and women alike pursuing the trade, though the imported yarn, ready dyed, is used largely in preference to the native home-spun.

This, however, is not everywhere the case. It is recognized in some parts *e.g.*, in the Mogôk district and in the Shan States, that coarser native yarn makes a cheaper and more durable material: in others, especially among the Kachins and Shans of Hsen Wi and Kĕngtūng, there exists a national costume woven from home-grown sources, and the people wear no other. In Upper Burma also, while the physical features of the land are more favourable to cotton cultivation, there are more regions as yet only partially opened to trade, and to which the journeyman clothes-seller does not penetrate with his wares. Here cotton is much grown and weaving flourishes, protected from competition, temporarily at least, by nature's barriers. In yet a few districts, even where there is no difficulty of access, the home industry appears to hold its own against foreign manufactures; thus it is reported from Mandalay, Mônywa, and Tagaung that the local trade has been scarcely, if at all, affected by importations of yarn and ready-made goods.

"As a general principle, however, wherever the imported fabric, whether in the form of yarn or goods, meets the home production, it rapidly ousts it.

"In the Kyauksè district no cotton fabric industry exists.

"At Taungdwingyi more than three-fourths of the cotton now manufactured is made from imported yarn. There is about one loom to three houses, but before imported yarn and cloth became so cheap, there was a large proportion of the population devoted entirely to weaving.

"From Pyinmana in the Yamèthin district it is reported that the industry is said to have been greater here in Burmese times, the restrictions of the Forest Department being assigned as the cause of the decline. What these restrictions are is not explained, but they appear to have reference to dyeing materials, which are mostly obtained from the bark of trees.

"In Pakôkku, at only one village of the Yesago township is weaving carried on, imported cotton fabrics being preferred, and in Yawdwin it exists for domestic use only and not for trade.

"In Katha, the Kachins and Kadus still very generally make their own clothing. Weaving is carried on for home use only, the instruments being very rude and the method laborious. The threads made from home-grown cotton are being rapidly ousted by the common threads of European manufacture. Threads equally cheap and dyed more brilliantly can be had in nearly all the bazaars.

"In the Upper Chindwin, there can be no question that the local industry, which was never on a large scale, is being rapidly supplanted by the importation of fabrics from abroad. The fact of the industry surviving in any shape must be largely attributed to the difficulty of communication which prevails in this district.

"The Deputy Commissioner of Bhamo writes: 'The cotton-manufacturing ndustry is now passing out of that primitive phase where every household

manufactured its own garments and cloths from the crop grown on its own piece of ground. This state of affairs was general in the Bhamo district only fifteen years ago, and, in the hills, the Kachins, and, to a lesser extent, the Shans, are still in the same stage of development. In Bhamo itself, there are few indications left of this condition of things. Material and prepared thread are more cheaply obtained from the steamer flats, and by consequence the local industry is rapidly giving way to imported fabrics. In some places, however, the old methods are maintained.'

"Thus in the Lower Chindwin the industry is said to be large and to employ a large number of families, though it is added that the cultivator, finding his jowar and paddy-fields give him a more satisfactory outturn, usually relegates his cotton to the inferior classes of the soil.

"In the Ruby Mines district the industry is confined to supplying home-wants and there is occasional enterprise in local, but not in export, trade. Further, more cotton was grown and more looms employed formerly than now; but the cause of the fall off is not apparent, as it is said 'the influence of imported fabrics on the local industry may be set down at almost *nil*, for at present the effect is not calculated to make the Burman abandon producing what he believes and knows to be both cheaper and more durable.' And again, 'it is probable that it will always be a domestic industry, unless and until, which is very unlikely, the imported manufactures are brought to the doors of the people, at from 25 to 50 per cent. below the present rates for their coverlets and *lungyis*.'

"In Mandalay the industry is resorted to only by the poorer classes for domestic use and not for the purpose of trade. Professional weavers generally work in silk, but occasionally take to cotton when the price of silk falls. Cotton is bought ready spun and dyed at Rs. 5 per hundred bundles, a bundle containing seven skeins.

"It is remarked, however, that 'imported fabrics do not in any way influence the local industry; those who can afford it indulge in them in preference to those of local manufacture, which provides material only to the poorer class.' It is perhaps doubtful, as will be seen later on, whether, under these circumstances, the influence of imported fabrics can be so completely discounted.

"From Meiktila the raw cotton is exported to Myingyan and from thence to Bhamo and Rangoon. 'The bulk of the yarn used for weaving purposes in the district is made locally, only a comparatively small proportion being imported, while the consumption of ready-made cotton clothing in the form of *pasos*, *lungyis*, &c., of European manufacture, is of quite unimportant dimensions. There has probably been an increase since the annexation in the amount of European ready-made clothing imported into the district, but the increase has been chiefly confined to Meiktila and some of the larger towns. Apart from this, there is little evidence to show that imported fabrics are ousting locally made materials, except perhaps in the finer qualities. Imported yarn is some three and a half times dearer than locally made white and dyed yarn.'

In Thayetmyo it is stated that in the past twelve years there has been a certain amount of progress in the industry owing to the introduction of mill-made goods, with which the Burmans have to compete. During the

last three years also a trade has been opened up with the Chinese from Bhamo, who buy the white cloth and dye it and make it into clothes in China.

"In the Southern Shan States a considerable quantity of cotton is exported in pressed bales to Yünnan, and caravans from China, coming round with wares, collect cotton and European and Indian cotton fabrics for their return journey. These latter are bought principally in Burma, but the raw cotton is obtained from the hill villages and local bazaars at the rate of Rs. 25 per 100 viss. Sometimes one, sometimes two, trips are made in the year. In the Kēngtūng State cotton is grown almost exclusively by the hill tribes. They make their clothes of it, and sell their surplus to the Shans of the villages and to the Chinese caravans.

"In Shan villages nearly every house has a loom, and the women clean, dye spin, and weave their own cotton. The hill-people, the Shans of the more remote villages, and generally the poorer sort still wear clothing of home manufacture. There can be no doubt, however, as to the popularity of the finer imported stuff.

"In Kēngtūng State tribal custom prescribes a certain style of dress and especially the women have a distinctive costume, as have also the Shan-Chinese community and the Lü men and women. Such dresses are now home-spun, but custom will only delay, not prevent, the use of imported fabrics as soon as traders can sell them at a less cost.

"Already the people of the Kēngtūng valley have adopted imported stuff for turbans, and the Lü women freely use imported fabrics for their jackets, after dyeing them to their own taste. So far the Shan-Chinese have adhered to their home-spun, but this is due as much to economy as to conservatism. When imported stuff is as cheap and as good as the native cloth, they will probably buy it.

"In the Hsi Paw State the villages on the main road used to weave their cloth, but now most people buy cotton goods which come up from below. There was formerly a fine sort of *hpyin* manufactured for making jackets and *thingans*, but now that finer cloth can easily be obtained in every bazaar, only the coarse *hpyin* is woven. There is a considerable amount of cotton cultivation round Lashio, but clothes are often made from imported calico of Manchester manufacture, and the cotton yarn used for weaving is not always locally produced.

"The Palaungs of Tawng Peng Loi Lông buy their threads already dyed from the hawkers, or traders, or in a bazaar. Imported fabrics have certainly reduced the amount of weaving done, and as the country becomes civilized the weaving will still further decrease. The locally-made cloth being infinitely more durable, it is cheaper to wear clothes made from it, but the richer Palaungs of Nam San and the surrounding villages that are nearer civilization prefer something finer in appearance. It is only amongst the poorer classes that weaving is now done.

"Turning to the report on the trade and navigation of Burma for the year 1895-96, we find that among the most notable increases in imports is recorded cotton twist and yarn 18½ lakhs, and coloured cotton piece-goods 15¾ lakhs, during the year, though there were indications that the trade was overdone.

"The following figures are given:—

	Rs.
Imported from the United Kingdom during the year 8,934,339 lbs. of cotton twist and yarn, valued at ...	45,87,322
From other foreign countries 226,360 lbs.	1,46,342
Total 9,160,699 lbs. valued at	47,33,664

"In the previous year the total was 3,830,594 lbs. valued at Rs. 28,99,925. In 1893-94—3,923,365 lbs. valued at Rs. 31,55,691.

The value of cotton piece-goods imported was Rs. 1,04,21,954 as against Rs. 87,53,277 of the year before and Rs. 1,26,73,323 of 1893-94.

"There was also a large increase in the importations of cotton twist, yarn, and piece-goods from Bengal, Madras, and Bombay. These country yarns are said to have competed successfully with the foreign article, and sometimes to have replaced it, but it is doubtful whether this will be so now that the import duties on the latter have been removed.

"The importations of country yarn were—

	1895-96 lbs.	1894-95 lbs.
From Bengal	2,531,748	1,624,763
From Bombay	3,163,290	2,976,084
From Madras	2,431,600	1,279,700

A substantial advance in each case.

"The figures relating to cotton piece-goods from Bombay, Madras, Bengal, Sind, and other Indian ports tell the same tale, except with regard to white bleached goods only, the imported quantity of which has fallen off.

"The following statistics from the report on the trade of Burma with the adjoining countries will illustrate how the cotton trade stands in relation to neighbouring States.

"Indian piece-goods were imported to the amount of Rs. 13,519 from the Shan States, China, Siam, &c., during the period from 1893-94, but in every kind of manufactured cotton, except European twist and yarn, there was a most marked advance in the quantity exported.

"The totals exported in the two triennial periods were as follows:—

	1893—96. lbs.	1890—93. lbs.
Indian twist and yarn	1,053,826	282,906
European twist and yarn	493,100	506,810
Indian piece-goods	249,630	28,916
European piece-goods	4,813,899	2,749,295

"The countries that have received these exportations are West China, the Northern and Southern Shan States, Siam, Zimmè, and Karenni.

"As these figures only include the exports sent by land, it is quite clear that yarn and cotton goods are conveyed largely through Burma to China, &c., and with the opening of the Mandalay-Kun Lông Railway a further increase may be anticipated.

Description of cotton weaving and spinning.

" Prominent among the reasons of the decline of the cotton trade is the slow and laborious native method of spinning and weaving as compared with the machinery used in the European and Indian mills. Below is a description of the process as carried on in the Shwebo district, which is typical of the whole country.

" 'The cotton boll, having been gathered, is separated from the pod and picked by hand ; it is then put in the basket (Fig. 1). It is next separated from the seeds, which is done by pressing the boll between two small wooden revolving rollers, worked by hand (Fig. 2). After pressing it the cotton is placed in a basket, which is funnel-shaped with the mouth towards the worker. This basket is made to revolve and the cotton is caught up on the string of a bow. By pulling it and loosening this bowstring the cotton fibres are separated out, and it becomes ready for preparing thread (Fig. 3). Wound about small sticks, the cotton is now made into a cylinder with a small aperture (Fig. 4).

" 'Figure 5 shows how with a spinning jenny these small cylinders are converted into thread. A small piece of thread is attached to the roller, and the loose end held to the cotton cylinder, which winds off in thread.

" 'As the small balls of thread are wound off they are put into a basket, and are of the shape shown in Fig. 7. The cotton has now to be cleaned. It is thoroughly soaked in rice-water and pressed out on a flat board and then placed in the sun to dry. After cleaning, the cotton thread is wound on a frame consisting of two horizontal bars, and combed to make it less coarse (Fig. 6). The comb used is the inside of the fruit called '*satthwabin*' which when dried is not unlike a dry hand sponge. The skein being thus roughly combed is wound on to a revolving circular frame (Fig. 8) and thence on to hand-reels (Fig. 9). The web is next prepared by winding the skein off two hand-reels round posts as shown in Fig. 9. The entanglement at the corner posts is of course intentional, as when the web is attached to the loom (Fig. 10) one set of threads must fall and the other rise.

" 'In Fig. 10 the actual process is not shown, but the shuttles in the basket, the loom, and the arrangement of the web are well represented. The shuttle is a small hollow piece of wood, containing a ball of thread which is thrown across between the two lines of thread composing the warp. A small pedal is attached to each of the two bars of the loom, and these are pulled down by the foot alternately, as the shuttle is thrown across.'

Burmese spinning and weaving terms.

Figure I (ဝါဝဇ္ဇုံ).—The basket in which cotton is first put.

Figure II (ဝါကြိတ်ခုံ).—Wheel for grinding cotton before dressing, a machine which removes the seeds.

Figure III (ဝါဂွင်းဝတ်ခုံ).—*Revolving basket in which* cotton is put *while it is being dressed.*

Figure IV (ဂွင်းငြင်ခုံ).—*Cylinder with* small aperture for cotton rolling.

Figure V (ရှင်းငင်ခုံ or ရင်).—Spinning wheel.

Fig. I.

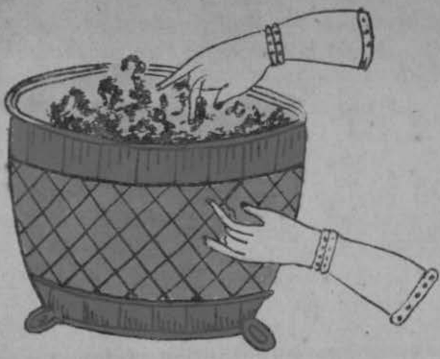


Fig. II.

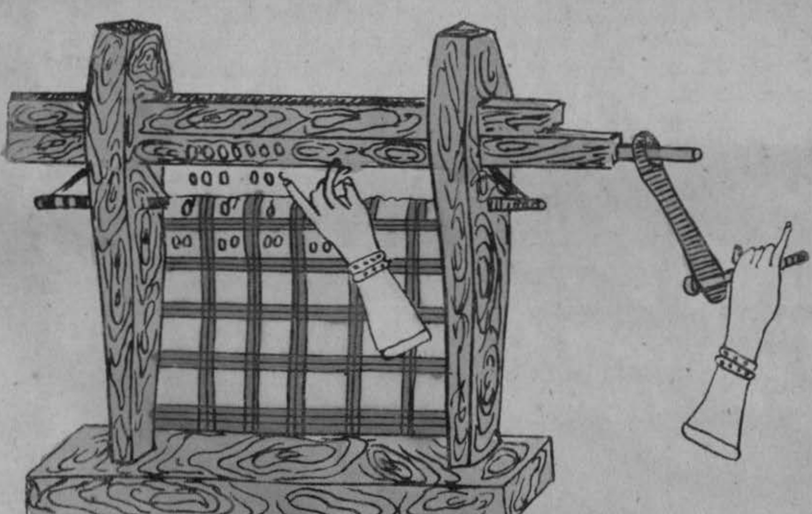


Fig. III.

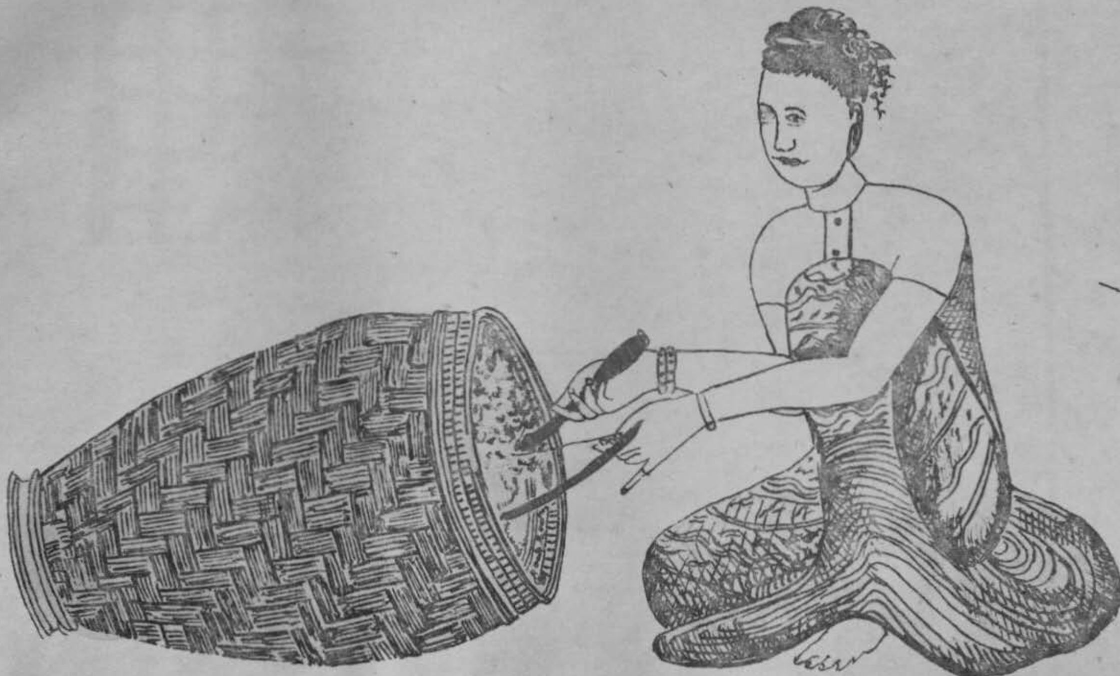


Fig. IV.

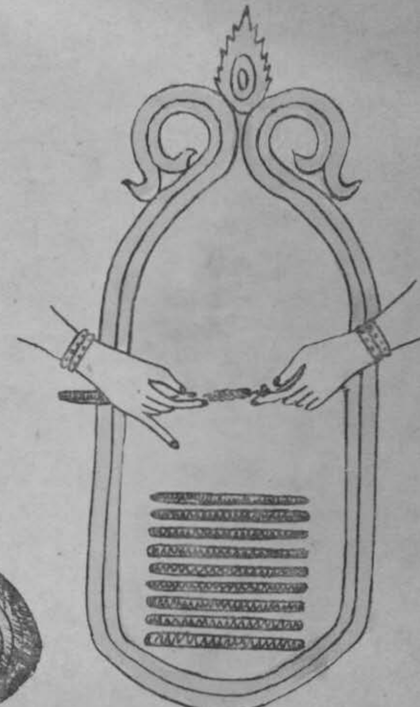


Fig. V.

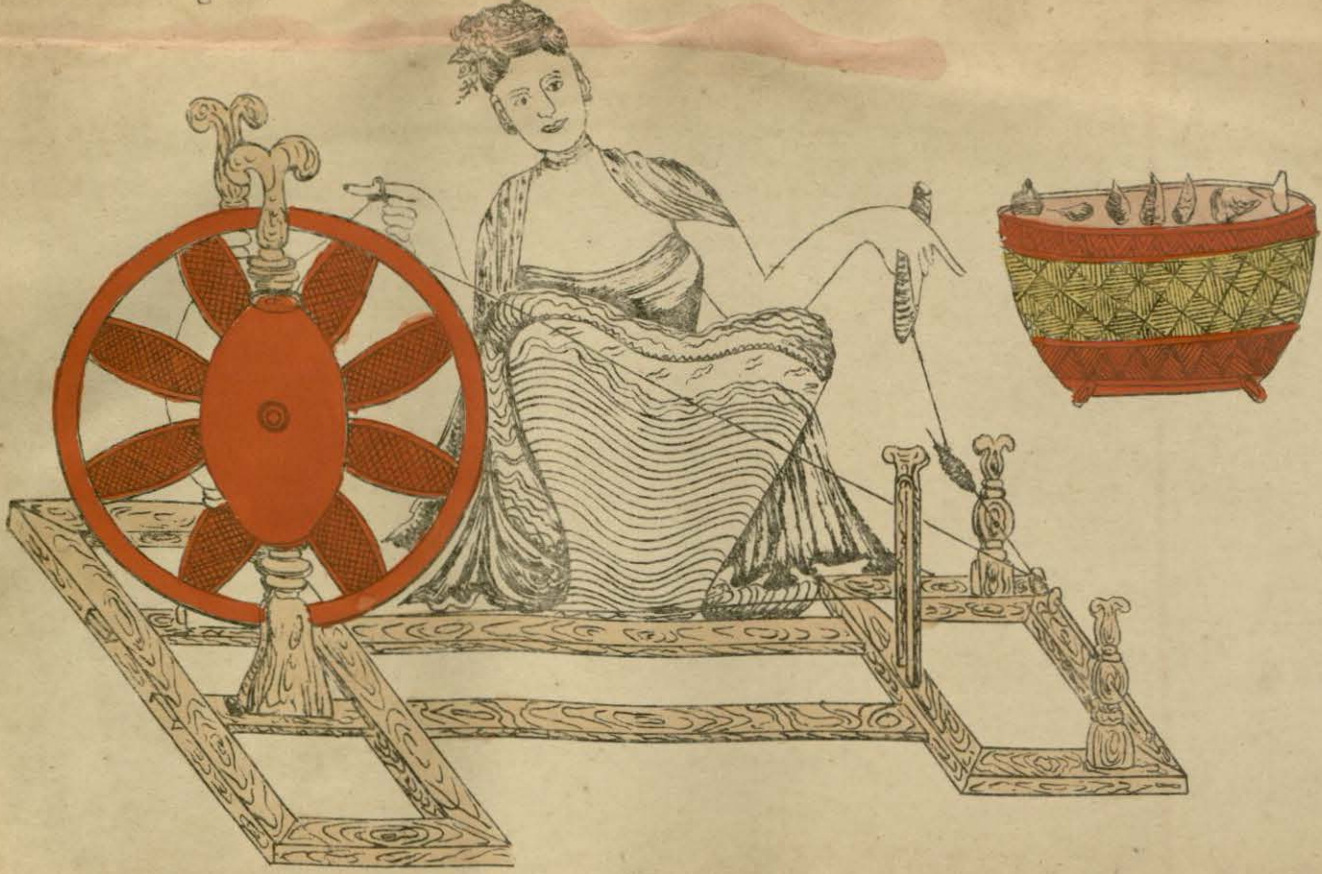


Fig. VI.



Fig. VII.



Fig. VIII.

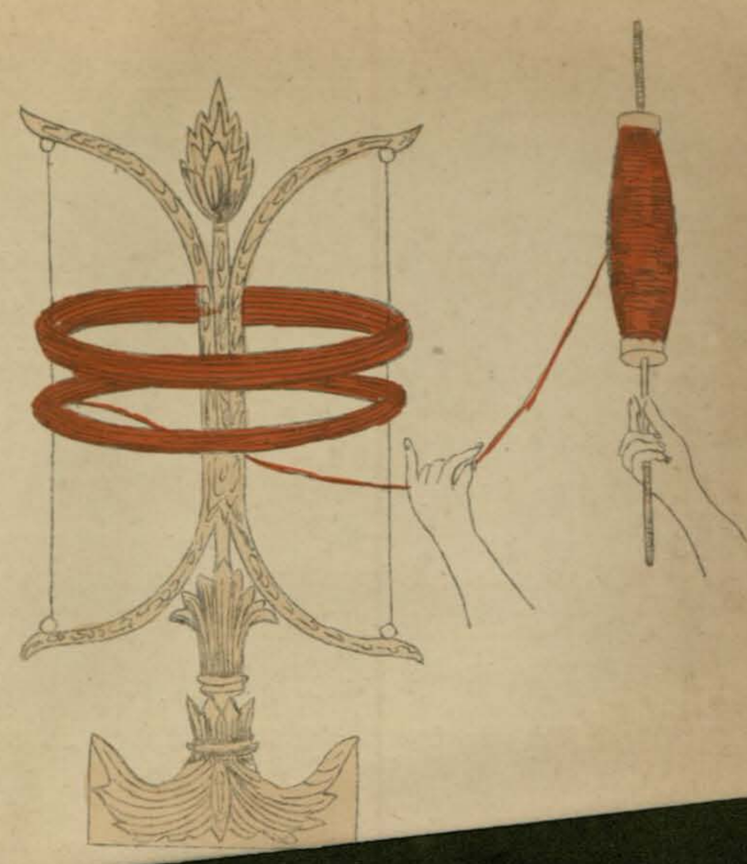


Fig. IX.

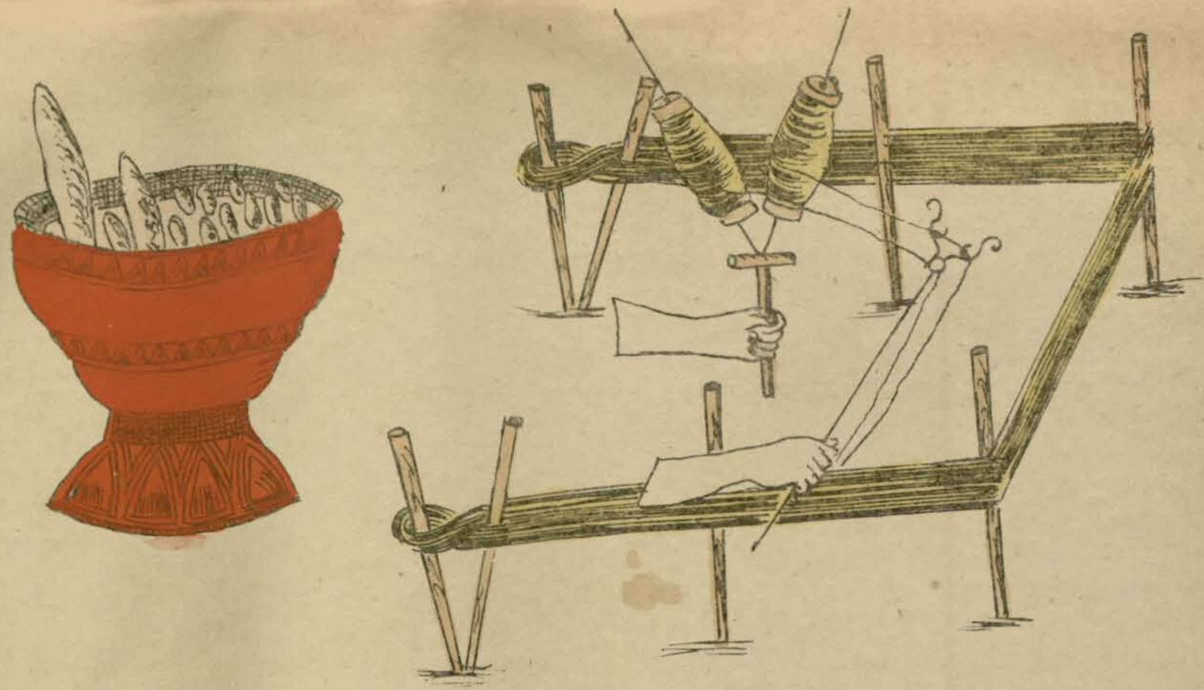
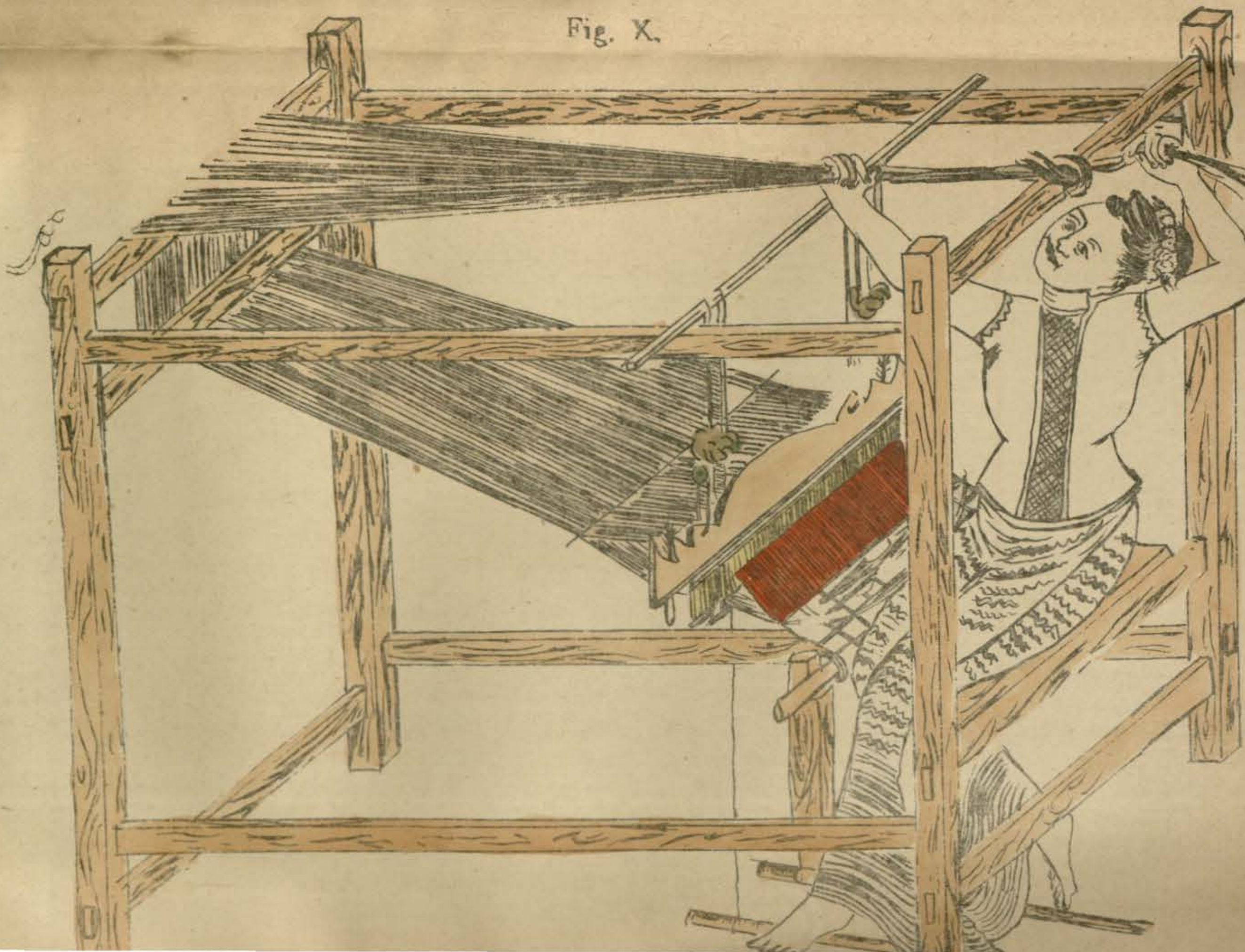


Fig. X.



gure VI (ချည်ဘော့ပုံ).—Quill for winding off the threads from the ıdle.

igure VII (ချည်စာသတ်ပုံ).—Machine for twisting skeins round round to harden the thread.

igure VIII (ချည်ချပုံ or ချ).—Simply a swift winding machine from :h the cotton is wound off on a reel.

igure IX (ယက်ကန်းရှည်ပုံ).—Frame for extending the threads for ving.

igure X (ယက်ကန်းယက်ပုံ).—Loom.

Some other terms.

ı.—Raw cotton; ဂွမ်း dressed cotton.

ါဖတ်လေး.—The bow for dressing cotton.

ာတ်တောက်.—A stick to dress cotton on a bowstring.

ာတ်သွားဘီး.—A brush made of the skin of the screw pine tree leaf, smoothing sized thread.

ိုး or ရဟတ်.—A reel or spool on which thread is wound from the ıdle.

ျည်ဝင် or ဝင်ရိုး.—The spindle of thread.

ာည်င်းလုံး.—A spool.

ရာက်လုံး.—A handle for a spool.

ဂွန်း.—The shuttle.

The Shans use much the same instruments as the Burmans; the Chins e a different process called '*gyat* weaving.' The Karen method, as :tised in the Toungoo district, is of a very primitive character. The ·ad is prepared in the same manner as by the Burmese, but no loom is ȷ. The two ends of the warp are simply fastened to some convenient ıre, and the loops in the middle passed round a rod of about one inch in neter, the threads being arranged one by one to the full breadth of the p, which is generally about eighteen inches. The rod is fastened to the .ver's body by a cord fixed at each end of it and going round the body. : weaver sits on the ground pulling one warp tight towards him, and ıipulates the shuttle and *gyat-thwa*.

The process is much slower than the Burmese method, but the cloth is igher value, being thicker and more durable.

aw cotton trade urma.

Cotton is grown in several of the Upper Burma districts, especially round Myingyan and Meiktila, for trade purposes. It is exported to India by sea and to Western China, either up the river to Bhamo and from thence overland to ınan, or down the river to Rangoon, whence it is shipped *viâ* the Straits he ports on the Chinese sea-board. This trade is almost entirely in the ds of Chinese agents resident in Burma, some in Rangoon, some in ıngyan, &c. They learn from friends in China the price of cotton in ous markets there, and thus decide whether they are likely to realize

more profit by shipping it from Rangoon to South China, or by sendin[g] it from Bhamo to Yünnan. That sent down by steamer is pressed befor[e] shipment by English firms in hydraulic pressing machines, of which ther[e] are said to be two only at present in Rangoon. It sometimes happen[s] that cotton which has been despatched to Rangoon, after lying there som[e] weeks, is finally taken up again to Bhamo and sent by the land route t[o] China in obedience to the latest intelligence.

"The trade returns show that 8,555 cwts. of raw cotton were exported b[y] sea in 1895-96, as against 4,489 cwts. in the preceding year, though i[n] 1892-93 the figures reached 20,434 cwts. Most of this went to China an[d] the Straits Settlements, there being a decrease in the shipments to Benga[l].

"By land 111,983 maunds were sent to Western China and the Norther[n] Shan States in the years between 1893-94 and 1895-96, as against 126,926 maunds in the preceding triennial period.

"There were 242,196 maunds sent from Upper to Lower Burma and 15,306 maunds from Lower to Upper Burma during 1893-94 to 1895-96, and in each case the amounts far exceed those of previous years. This up and down traffic is probably partly due to the reason given above, and now that the Railway Department has reduced rates for cotton, a further stimulus will doubtless be given to the trade.

"The figures are some index of the surplus raw cotton production in Burma, as there were no importations from outside, except an insignificant amount of 39 maunds from the Northern Shan States. To obtain the total outturn must further be reckoned the amount grown and consumed on the spot by the women weavers of the house, for which there are no figures.

"It would appear then that, if mills were established in Burma, there would be no difficulty in obtaining cotton, and that there is a better prospect for a raw-cotton industry than for the manufacture of cotton fabrics in Burma, as now carried on.

The quality of Burma cotton.

"The cotton here is similar to that grown in most parts of India and has the same drawbacks. It is too short in staple for some machinery, though this does not prevent it being used in many kinds of fabrics, and it is so badly cleaned that its value is much lowered.

"The first defect has probably been much exaggerated, as it has been found possible in many cases to use Indian cotton as a subtitute when the supply of American cotton has failed or the price has been unduly high. The Indian cotton is said to be best suited for the lower numbers, 20 and under, and it is these that are being mostly imported into Burma now. Whether longer staple cotton could be introduced into Burma can only be proved by experiments. The very few which have been made in Lower Burma, have not been favourably reported on, and the climate has been described as unsuitable in most parts, but such was the case in India at first, though it was subsequently admitted that when these failures had brought experience, later efforts met with a larger measure of success.

The method of cultivation.

"The cultivation of cotton in Burma can hardly be said to have had a fair trial. The cotton is now sown principally on *taungyas* or hill clearings, the poorest class of soil, and mixed up together with the paddy, scarcely any choice of site being





TAUNGYO WOMEN



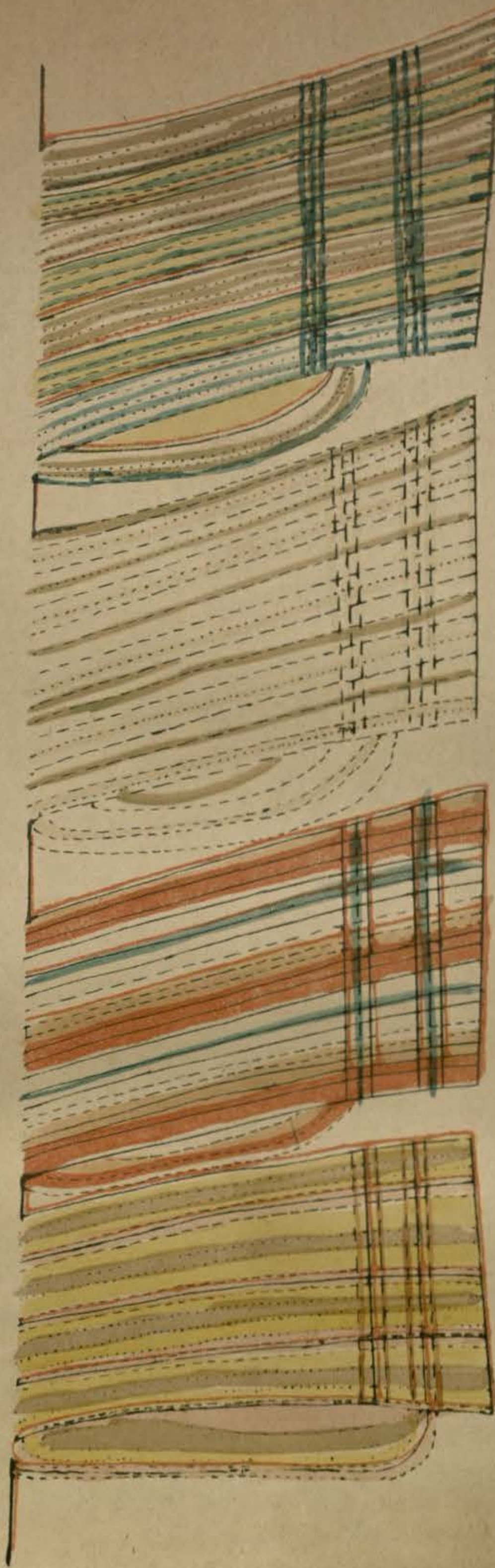
TAUNGTHU



TAUNGYO TABET (*head dress.*)



TAUNGYO THINDAING



made. There has been no real manuring of the land, and the rudest kind of plough is employed, which does little more than scratch the ground. No division of labour is seen between pickers, cleaners, and planters, and practically no experiments with exotic seed have been made. The cotton often hangs long after it is ripe, and when plucked remains days on the ground, mixed with the dirt and accumulating sand and stones. Most of this it would not require an expert to remedy. The cotton is sold raw by weight; the amount of dirt increases this, and is so much waste when the cotton comes to be used. Carelessness in the collecting and housing is the chief cause, and it should be brought home to the cultivator that the price of his cotton is materially reduced because he will not take the trouble to clean it.

"Still, in spite of all this, cotton has been produced for exportation, and the merchants in Rangoon say that, if it were better cleaned, the demand for it would be greater than it now is.

"At present the districts in which it is most regularly grown are those in which the paddy crops are liable to fail for lack of rain, for cotton does not require so much water as paddy, *e.g.*, Myingyan, Meiktila, Yamèthin, and the parts in which there is little paddy-land but mostly hilly ground, and the cultivation is on forest clearings. In districts of the latter kind, *e.g.*, in the Ruby Mines, it is a problem what is to be done as the forest becomes more and more exhausted by *taungya* cultivation, and attention is being directed to some alternative crop that can be grown in places which are unsuitable to paddy, or in rotation with it, on the same area. It would seem that cotton is one of these, and one to which the Burman naturally takes. If it has been grown successfully on the *taungyas* in conjunction with paddy, there is little doubt that, when planted separately and more carefully attended to, it would be more productive.

Cotton fabrics.

"From the artistic side there is little to be said of the cotton fabrics of Burma. *Pasos*, *tameins*, *lungyis*, jackets, bags, blankets and *kulagas*, or curtains, are the chief articles made by the Burmese, and there is not much variety in the patterns. Most are either stripes or checks, in which the tints are nicely blended, and they use all colours, uniting the imported red yarn with their own home-made. But the best and brightest patterns are in the silk garments, and sometimes a cotton *paso* is shot with threads of silver or gold silk. The most elaborate designs are found in the curtains or *kulagas* used for hanging on walls. Here the art advances to the pictorial stage, various scenes, figures, &c., being represented. Dark blue and indigo colours are those fancied by the Shans and hill tribes, but their sombreness is generally relieved by trimmings of red or some bright hue. Among the Shans of the Hsen Wi State some curious sleeping-mats or cloths are made. They are described as being of zig-zag or diamond shaped pattern, woven usually in black or red on a white ground, and carried out with the nicest exactness and regularity of detail.

"Still more intricate is the Kachin work, both in adornment of bags or pockets and the female costume. The ground work is usually dark blue with longitudinal blue stripes, but is sometimes seen all white, or made of equal stripes of red, white, and blue, into which are woven at intervals little stars, crosses, or squares of various colours and irregular shapes. The Lü

women of the Trans-Salween Shan States wear a turban fashioned like a tea-cosy. It is always dark blue and ornamented with real or imitation gold and silver thread, which is interwoven with the cotton, and, when on the head, the ornamental portion is outside and to the front. Hitherto this has been preserved, but in the weaving of their embroidered petticoats and the border on the trousers of the Lü men pieces of coloured imported stuff are now added. The attempts of English manufacturers to imitate such garments have been very few and not sufficiently like the original to satisfy the people. But there are signs that, struck by the brilliant dyed foreign stuffs, even these hill races are beginning to purchase them and introduce them into their native dress. Thus the tribal costumes will soon be wholly modified.

The silk-weaving industry.

"Silk-weaving is not nearly so much practised as it was. It was once a great and lucrative industry, and the weavers of Amarapura and Sagaing were especially noted. The decline is greatly due to the importation not only of cheaper silk fabrics, but of cheaper ready-made, variegated, silk thread, which saves much time and enables the weaver to produce more cloth than when he has to prepare his thread as well as weave it.

"However, there is still a large sale of Chinese raw silk and the processes through which it passes are as follows, according to Mr. C. A. E. G. Adams :—

"(1) The raw silk is separated into the three qualities of fine, medium, and coarse by winding off the rolls of the raw-thread on to large square reels.

"(2) The coarse is utilized for the production of mixed cotton and silk-fabrics.

"(3) The fine threads are twisted in pairs to form the medium kind.

"(4) The medium is wound on to large wheels. The thread is then washed with soap and boiled to get rid of the Chinese rice and other foreign matter. It is then dyed, and the rolls of thread are gently stretched and dried to separate the filaments. Then the threads of suitable length, sufficient for the intended breadth of the fabric and the different colours for the design, are counted out for the warp, and the requisite number of shuttles for each colour in the order of requirement are filled to form the weft. As many as one hundred shuttles are sometimes employed.

"The loom, or *yekkansin*, is simple and effective, and consists of a frame with four small perpendicular posts forming a rectangle measuring about four cubits by two and a half. These are connected by bars at the top, in the middle, and at the bottom, a few inches from the ground.

"On the near, middle, and farther top side of the longitudinal bars rest a pair of rollers (*leik*) at the full distance of the length between the middle latitudinal bars. The roller at the nearer side where the operator's seat is is employed for rolling the finished fabric. On the other, opposite, are the threads which form the warp.

"To separate the threads of the warp into the two rows, alternately upper and lower, to allow of the shuttles being passed between them to produce

the weft, are two frames like a comb (*hnat*), closed by a bar at the points of the teeth. Stout cotton threads are used to form the teeth of the closed comb. These combs are hung at their respective ends by sliding looped cords resting on a round bar, usually a piece of bamboo, placed across the top longitudinal bars of the main frame. Beneath the *hnat* is a latitudinal cross-bar on which are placed two pedals (*che-nin*) for the feet of the operator, the toe-ends of which are connected by cords with the combs to enable the weaver to alternate the two series of threads of the warp by the alternate pressure of the pedals with the feet. Placed in front of the combs and nearer to the weavers is a third frame (the *lek-khat* or *yin-thwa*, pronounced *yathwa*), like the combs, with twice the number of spaces that each *hnat* has, to permit of all the threads of the warp being passed through the interstices of the teeth. These are made of very fine slit bamboo. This third frame, which is employed for pressing the threads of the weft close together, is suspended at its end by cords made fast to an independent cross-bar placed over the two top longitudinal bars of the main frame.

"Finally there is the shuttle (*lúm*), the body of which is made of a hard black wood (*yindaik*) or, if large and for white and cotton fabrics of simple patterns, of the almost equally hard red wood *padauk*. The spindle is manufactured of hard bamboo. A hundred of the former cost three rupees, and one of the latter costs four annas. An entire weaving frame with all appurtenances costs ten rupees. The preparation for work is as follows :—

> "The threads for the warp are arranged where the weaver sits and are looped on to the roller (*leik*), and after the threads are passed through the interstices of the pressing comb (the (*lek-khat* or *yin-thwa*) they pass alternately through the lifting and depressing combs (*hnat*), then from under the further rollers (*leik*), round it and over the top of the cross-bar and roller at the further top part of the frame, till they reach the top bar above the weaver's head, where they are gathered into a bunch and secured to a piece of wood made fast to the top bar overhead, to allow of the worker paying out the warp thread as the fabric grows and is rolled up on the roller in front of him.

"The seat is a rough bench usually made of a moveable loose plank with two holes let into projecting parts of two upright posts fixed into the ground.

"There are four main classes of designs :—

(1) The *balá* of thirty-seven patterns.
(2) The *acheit* of thirty.
(3) The *gaik* } of one pattern each, but varied according to the number
(4) The *sat* } of colours employed.

(1) "The *balá* comprises—

(1) The *saung-daw-baik*.
(2) *Le-bwin-saing*.
(3) *Paungdu-sin*.
(4) *Paungbo; paungma*.
(5) *Yè-sin*.
(6) *Tagyaung-hto*.
(7) *Laukadat*.
(8) *Nadi*.
(9) *Nadi-an-gwè*.
(10) *Padein-sin*.
(11) *Hnit-kodwe*.
(12) *Saung-daw-ku*.
(13) *Shwebo-yo*.
(14) *Shwebo-nanthein*.

(15) *Shwebo-hteik-tin.*
(16) *Tein-kho-sin.*
(17) *Kwek-htôn.*
(18) *Salwè-sin.*
(19) *Awa-sin.*
(20) *Leimmaw-sin.*
(21) *Yègwet.*
(22) *Leimmawgwet.*
(23) *Awa-gwet.*
(24) *Hnit-tat-laukadat.*
(25) *Laukadat-an-gwè.*
(26) *Thanbat-sin.*
(27) *Ngwe-ban-sin.*
(28) *Dewi-sin.*
(29) *Kyauk-sein-sin.*
(30) *Mayan-sin.*
(31) *Daw-na-sin.*
(32) *Bônbaing-sin.*
(33) *Yathet-pan.*
(34) *Ahpyugwet.*
(35) *Hpu-nyo-sin.*
(36) *Baddamya-sin.*
(37) *Hpayè-u-sin.*

(2) "The *acheit* includes—

(1) The *myo-ye-gyi.*
(2) *Myo-ye-gwè.*
(3) *Káli* or *wúnna.*
(4) *Kyet-mi.*
(5) *Kyo-gyi.*
(6) *Sein-na-hpan.*
(7) *Tho-sin-ban-wút.*
(8) *Seindaing-sin.*
(9) *Atwin-sin.*
(10) *Kala-ban.*
(11) *Sein-tatkhet ; myatakhet.*
(12) *Hnit-pwin-gaing.*
(13) *Leip-pya-sin.*
(14) *Yè-cheit.*
(15) *Kyetaya.*
(16) *Sadosin.*
(17) *Kyabu-kyagaing.*
(18) *Shwetazók ; ngwe-tazók.*
(19) *Shit-pwin-saing-kyogyi.*
(20) *Hku-hnit-ein-sin.*
(21) *Kyogyi hteu-khaung-din.*
(22) *Yè-sin-ban-wút.*
(23) *Thôn-sin-nawadat.*
(24) *Saung-daw-ku-sin.*
(25) *Dingapan.*
(26) *Hpayaung pan.*
(27) *Kywè-gyo-gaik.*
(28) *Taung teik-pan.*
(29) *Hpila-cheit.*
(30) *Keit-cheit.*

A list of the Burmese equivalents of these names is appended :—

ပလာပုဆိုး။ထဘီ။အဆင်အမည်။

ဦးရေ။	အဆင်အမည်။	
	အမျိုးကြီး။	အမျိုးရ။
	ပလာ	၃၇။
	အချိတ်	၃၀။
	တိုက်	၁။ ပန်းရုံတိုက်။
	စဝ်	၁။ ပန်းဆင်စဝ်။

ပလာပုဆိုး။ပလာထဘီ။အဆင်အမည်။

ဦးရေ။	အဆင်အမည်။		
၁	စောင်းတောင်ပိုက်	....	...
၂	လေးပွင့်ဆိုင်	....	....
၃	ပေါင်တူစင်း	....	....
၄	ပေါင်ဖို။ပေါင်မ	...	....
၅	ရဲစင်း	....	....
၆	တကြောင်းထိုး	...	....
၇	လောကဓါတ်	....	...
၈	နဒီ	...	....
၉	နဒီအံကွဲ	....	....
၁၀	ပတိန်းဆင်	....	....
၁၁	နှစ်ကိုယ်တွေ့	...	...
၁၂	ဆောင်တော်ကူး	...	...
၁၃	ရွှေဘိုရိုး	....	....
၁၄	ရွှေဘိုနန်းသိမ်း	....	....
၁၅	ရွှေဘိုထိပ်တင်	....	...
၁၆	ထိမ်ခိုးဆင်	....	....
၁၇	ကွက်တုံး	....	....
၁၈	စကွယ်စင်း	....	...
၁၉	အဝါစင်း	....	....
၂၀	ထိမ်မောင်စင်း	...	...
၂၁	ရဲကွက်	....	...
၂၂	ထိမ်မောင်ကွက်	...	....
၂၃	အဝါကွက်	...	...
၂၄	နှစ်ထပ်လောကဓါတ်	....	...
၂၅	လောကဓါတ်အံကွဲ	....	....
၂၆	သံပတ်ဆင်	...	...
၂၇	ငွေပန်းဆင်	....	....
၂၈	ဒေဝီစင်း	...	....
၂၉	ကျောက်စိမ်းစင်း	...	...
၃၀	မချမ်းစင်း	....	....
၃၁	ဒေါနစင်း	...	....
၃၂	ဘုံဘိုင်ဆင်	....	....
၃၃	ရာသက်ပံ	....	...
၃၄	အဖြူကွက်	...	....
၃၅	ဖူးညိုဆင်	....	...
၃၆	ပတ္တမြားဆင်	....	....
၃၇	ဖရဲအူဆင်	....	....

အချိပ်ပုဆိုး။အချိပ်ထမိ။အဆင်အမည်။

ဦးရေ။	အဆင်အမည်။		
၁	မြို့ရှေ့ကြီး	....	....
၂	မြို့ရှေ့ကွဲ	...	....
၃	ကာလိဝါဝဏ္ဏ	...	....
၄	ကြက်မီး	...	....
၅	ကြိုးကြီး	...	....
၆	ဝိန်နဘန်	....	....
၇	သုံးစင်းပန်းဝတ်	...	....
၈	ဝိန်တိုင်ဆင်	...	....
၉	အတွင်းဆင်	...	...
၁၀	ကုလားပန်း	...	....
၁၁	ဝိန်တခက်။မြတခက်		....
၁၂	နှစ်ပွင့်ခိုင်	....	...
၁၃	လိပ္ပြာဆင်	...	....
၁၄	ရဲချိပ်	....	....
၁၅	ကျေးတရော	...	....
၁၆	စာတိုးဆင်	...	....
၁၇	ကြာဖူးကြာခိုင်	...	...
၁၈	ရွှေတဆုပ်။ငွေတဆုပ်		....
၁၉	ရှစ်ပွင့်ဆိုင်ကြိုးကြီး		....
၂၀	ခုနစ်အိမ်ဆင်	....	...
၂၁	ကြိုးကြီးထိပ်ခေါင်တင်		...
၂၂	ရဲစင်းပန်းဝတ်	...	....
၂၃	သုံးစင်းနဝဒတ်	...	....
၂၄	ဆောင်တော်ကူးဆင်		...
၂၅	ဒင်္ဂါးပန်း	...	....
၂၆	ဖယောင်းပန်း	....	....
၂၇	ကျွဲချိုကိုက်	...	....
၂၈	တောင်ထိပ်ပန်း	....	...
၂၉	ဗိလာချိပ်	....	...
၃၀	ကိုက်ချိပ်	...	....

The following account of the dyes and methods of dyeing customary in Burma is condensed from a monograph prepared by Mr. J. D. Fraser in 1896:—

Dyeings.

"(1) The colours, for the most part very pure and beautiful, are combined by the weavers with the most harmonious effect. Bright or gaudy colour is used sparingly and then only to produce the contrast which may be necessary. Unfortunately native dyes are being rapidly ousted by the common aniline dyes of European manufacture, which give a bright and gaudy colour, instead of the subdued and artistic tones obtained from native ingredients. Besides the meretricious results most of the aniline colours give they have not the important merit of permanence, but fade rapidly when exposed to the sun.

"The Burman, however, naturally averse to labour, will no longer practise the tedious and complicated native methods, when dyes equally cheap and with a little extra brilliance thrown in are to be had in every bazaar.

"The wholesale introduction of aniline dyes cannot fail to lower the standard of Burmese taste, though it is said that owing to the natural roughness of Burmese silk, the vulgar brightness of these dyes becomes to some extent neutralized and lower toned and warmer shades result.

"Burmese silk manufacture, notwithstanding the competition of the cheaper imported stuffs, still holds its own and is infinitely preferred for strength and durability of fabric. In Mandalay, the headquarters of the silk-weaving industry, aniline dyes have displaced all except three or four sorts of Burmese dye-stuffs. These are two species of arnotto, the *Bixa orellana*, and the wild arnotto, *Rottlera tinctoria*, which comes from the Shan States, turmeric, and occasionally lac and safflower. Indigenous indigo is only used for dyeing cotton.

Dyeing with other indigenous products is still carried on in out-of-the-way parts, but usually only for domestic use. The every-day clothes of a cultivator are woven by his wife and daughters from home-grown cotton and dyed with forest dyeing products, but holiday clothes are, as a rule, bought in the bazaar, and, whether made in Burma or imported from Europe, are generally dyed with aniline dye-stuffs.

Of the dye-stuffs given below only three find their way out of Burma—

(1) Cutch, which Burmans rarely use for dyeing, ranks first, though the exports in 1890-91 of 203,350 lbs., value Rs. 31,73,961, fell off in 1895-96 to 192,483 lbs., value Rs. 39,94,613.

(2) Stick lac, exports in 1890-91 4,783 lbs., value Rs. 1,11,737, rose in 1895-96 to 15,823 lbs., value Rs. 4,55,180.

(3) *Sappan* wood, of which Mason, in his book on Burma, says that over 500,000 lbs. were exported from Mergui between 1830—1840, is now only carried in small quantities to Dacca, Negapatam, and other coast posts.

"Imports of aniline dyes have increased from 42,044 lbs. in 1890-91 to 53,350 lbs. in 1895-96.

"Indigo is the only plant in Burma that undergoes regular cultivation for the sake of the dye.

"The jack tree, from which the yellow dye for dyeing Buddhist monks robes is extracted, is raised chiefly on account of the fruit, only old, non-fruit-bearing trees being taken for dye purposes. Turmeric is more often used as an article of food and medicine than as a dye; arnotto (*Thidin, Bixa orellana*), which generally grows wild, may sometimes be found in gardens, and, with these exceptions, all the dye-plants grow wild and are not considered worth cultivating. The true indigo plant (*Indigofera tinctoria*), which yields the indigo of commerce, is grown occasionally by Karens and Burmans, but less extensively than the wild species of *indigofera* and the *Ruellia indigofera*. Indigo cultivation is, however, falling off all over Burma.

"Bengal Indigo, prepared in cakes and ready for use, is on that account preferred by the Burman to his home-grown stuff, the extraction of which is laborious in the extreme.

"The native article finding no market, lands formerly devoted to indigo cultivation now for the most part raise other crops, and what little is cultivated is consumed locally, as often as not by the cultivators themselves. The following is an account of indigo cultivation as practised in the Magwe district:—

"The indigo plant (မဲရိုင်းကြီးပင်) is not a troublesome plant; it grows on any kind of soil, but prefers a sandy loam. The ground must be finely ploughed; about two and a half *pyis* or one-fifth basket of seed are sown for one acre. One weeding only is required, when the plants are six inches high, after which no more care need be taken of the plant till it is reaped. Reaping begins when blossoms appear.

"On high lands the seed is sown at the end of May and the plants are reaped in October and November. On islands sowing takes place in October and reaping in February.

"The cost of cultivating the plant and extracting the dye is shown as follows:—

	Rs.	A.	P.
Two and a half *pyis* seed for one acre ...	1	0	0
Hire of one pair of cattle to plough one acre (four days at 8 annas a day)	2	0	0
Hire of one ploughman (four days at 4 annas a day)	1	0	0
Coolie hire for weeding (ten women, two days, at 3 annas a day	3	12	0
Coolie hire for reaping	3	12	0
Lime for fermenting leaves (three baskets at 8 annas each)	1	8	0
Ten chatties	2	8	0
Total ...	15	8	0
One acre yields 85 viss, which at 4 annas a viss ...	21	4	0
Profit ...	5	12	0

"The profits are small, even if the cultivators themselves do the work of extracting the dye. Annas 4 a viss is the retail price. Wholesale in Mandalay it averages from Rs. 15 to Rs. 25 per 100 viss, according to the season.

"The following are local methods of extracting the dye :—

"In Tharrawaddy indigo plants, with leaves attached, are made into small bundles and placed in cold water in an earthenware jar (အင်တုံ)—young plants for two days, old plants three days—until more or less rotted, when the liquid is squeezed out and the bundles thrown away. Lime is then added—ten ticals for every two and a half quarts of liquid, which is green in colour. Stirred up, it turns a deep blue, called the "colour of a buffalo's eye" (ကျွဲမျက်လုံးရောင်), and allowed to stand ; a deposit of one-fifth the depth of the liquid forms at the bottom of the pot. This deposit is called *mènè* (မဲနယ်). The water at the top is then strained off. The first portion, which is red, is valueless, and should be thrown away ; the remainder, of a bluish green, is kept in another vessel or strained off and added to the first deposit. A piece of teakwood about one inch thick and two feet long is run through the centre. There is a superstition that this preserves the quality of the indigo.

"In Mergui the indigo plant is treated in much the same way, only sessamum oil is added to remove the bubbles caused by the mixture of lime.

"In Pegu the method is to soak chips of the stem and root of the indigo plant in water for twelve hours, add lime, warm over a fire, let it settle, and strain off.

"In Meiktila bundles of the branches are thrown into a pit full of water for three or four days until the leaves have rotted, when the liquid is baled out into pots. Lime is then added and the mixture churned with a bamboo beater (ထပြွတ်). A sediment forming at the bottom, the liquid at the top is thrown away. Fresh leaves are then soaked in a separate pot, the leaves when rotted thrown away, and to the liquid remaining is added some of the sediment previously obtained.

"In considering the various local methods of dyeing (silk and cotton alone are dyed in Burma), it will be convenient to first take the elementary colours, blue, red, yellow, black, and their different shades, and then compounds of these, such as orange from red and yellow, green from yellow and blue, and purple from red and blue &c.

A.—*Blue* (အပြာ).

"In Pegu, to a solution of indigo is added a decoction of castor-oil (ကြက်ဆူ) leaves (¼ viss of leaves to three quarts of water), and some ash of young bamboo or sessamum stalk. Allowed to stand for twelve hours, cotton or silk is immersed and then hung up to dry. Immersion is repeated according to the depth of blue required.

"Another process in Pegu is to mix a little plantain ash, decoction of *kyaungya* bark, and indigo heart-wood with the indigo solution. Boiled and allowed to stand for five days. If red bubbles ascend, the mixture is good for dyeing. A little jaggery (ထန်းလျက်) and plantain leaf ash will bring out the bubbles. Should the colour not be dark enough, more of the indigo heartwood decoction must be added.

"In Mergui, liquid of potash from a description of mangrove (သမဲ့ပင်) is mixed with the indigo solution. In ten days fermentation sets in and it is ready for dyeing.

"In Meiktila, a little of the ash of the *Acacia leucophlœa* (ထနောင်းပင်) or tamarind (မန်ကျည်းပင်) or *Amarantus spinosus* (ဟင်းနုနွယ်) is added to the indigo solution, which is set to stand for ten days.

"In Myingyan, to one part of indigo add two parts of ash of the *thaminza* tree, one part of lime, and one part of jaggery; mix in water and allow to stand for three days.

"In Tavoy, two quarts of the sediment of indigo are put in a 25-viss jar, which is filled up with the thick liquid standing on the top of the sediment. One spoonful of *dani* sugar (ထင်ထဲ) is added, and the whole well stirred. If properly mixed, it turns a yellowish green. After standing four or five days the cloth is immersed. A deep blue black is obtained by repeating the immersion twice a day for three days. If washed afterwards, it will fade slightly, but not lose colour. A bluish grey is obtained by boiling the indigo-dyed cloth in the juice of either the common citron (ရှောက်) or double-leaved citron (ရှောက်ပုတ်)—about three quarts citron juice and three viss indigo leaves for one viss yarn. A light shade is obtained by adding lime (ထုံးဖြူ) to the indigo—two *ticals* lime for one viss yarn.

"Material dyed in indigo is washed in a solution of alum (ကျောက်ချဉ်)—one *tical* alum for one viss yarn. This acts as a mordant.

"In Taungdwingyi, Magwe district, the bark of the *palanbin* is used as a mordant. The indigo-dyed cloth is immersed in a decoction of this bark.

"In Rangoon, the Chinese use a solution of *daukyat* leaves in the same way.

B.—*Red* (အနီ).

"Lac (ချိပ်) is a deposit left by insects on branches of certain trees, principally the *paukbin*, *zibin*, *ingyin*, and *thitya* trees. The sticks are removed and the lac powdered and soaked in water till it loses all colour. A viss of lac will colour three gallons of water.

"In Mergui, plantain or tamarind ash is mixed with the lac infusion—two and a half *ticals* for every gallon of lac water, which is then strained off.

"Silk dyed with arnotto (ဒိထင်းစေ့) and soap-earth (ဆပ်ပြာ) is soaked for six hours in a solution of alum water—three *ticals* alum for one viss silk. Wrung out and dried, it is boiled in the lac infusion above described for a long or a short time according to the depth of colour required. A dark red colour results.

"In Sandoway, besides the alum, two *ticals* powdered *daukyat* leaves and two *ticals* powdered *kinbungyin* leaves are added to the lac infusion.

"In Pegu, powdered *yamin*, and in Prome powdered *daukyat* leaves are added to the lac in water—two parts lac to one part of *yamin* or *daukyat*, which is then strained off. In this is boiled cloth or silk tied up in leaves of the *kinbun* plant (ကင်ပွန်းပင်).

"In Tavoy, twenty *ticals* of powdered *thitkauk* bark, with one viss of powdered lac, are soaked in cold water for twelve hours. The infusion is strained off and boiled, the article to be dyed immersed, and alum, tamarind juice, or lime juce added, while boiling, as a mordant; when cool it is rinsed out in cold water and dried; the colour is fast.

The madder plant (နိုင်းဂေထးပင်) grows wild throughout Burma. In Akyab, cotton soaked in a solution of plantain ash and dried is dipped in a decoction of sliced madder root, wrung out, and dried in the sun. The process is repeated three or four times. The dye is said to be permanent.

In Mergui, half viss yarn, first soaked in a solution of ash of *Amarantus spinosus* or sessamum (two viss ash for two and a half quarts water) and dried, is then dipped in a solution of sessamum oil, powdered castor-oil seeds, and powdered *nibase* (one viss *nibase*, half viss oil, half viss castor-oil seeds, three and a quarter gallons water) and boiled.

"In Thayetmyo, a quantity of pounded castor-oil or sessamum seed is mixed with the cotton in water. The cotton is then wrung out and dried. This is repeated three or four days. Powdered *nibase* (madder) is then sprinkled on the cotton, which is, as before, put in water and boiled till it has absorbed all colouring matter. It is then taken out and dried. The operation is repeated till the required depth of red is obtained. The colour is fixed by boiling the cotton so dyed in a solution of *yamin* bark (ယမင်းပင်).

"In Myingyan, cotton dipped in a solution of soap-earth (ဆပ်ပြာ) and castor-oil seeds is rinsed out in clear water and after drying finally dipped in a solution of *nibase* and *daukyat* leaves (25 *ticals* madder, 2½ *daukyat*, for one viss of cotton).

"In Pegu, the colour is fixed by soaking the madder-dyed cotton in a decoction of *ingyin* bark."

Another process in Pegu is to soak cotton in a solution of young bamboo ash and sessamum oil in water (2 viss ash, 5 *ticals* oil, 6 quarts water). Dry in the sun, repeat the operation for three days and then immerse in a solution of *nibase* and *yamin* bark (3 viss madder, 10 *ticals yamin*, and 4 quarts water). Dry in the sun and repeat the operation three times. Again boil for 30 minutes in clear water and finally immerse in a solution of madder and *yamin*.

In Lower Chindwin, the cloth is boiled with soap-earth or sessamum ashes and sessamum oil (5 *ticals* oil, ½ viss ash or soap-earth for 6 yards of cloth). When well boiled it is wrung out and dried in the sun, then successively washed in water, dipped in a solution of madder, and dried in the sun; again immersed in the madder and again boiled in water for a short time and dried; again boiled and dried, next sprinkled over with powdered *nibase-gale* (*Morinda persicæfolia*), and finally boiled in water and dried in the sun. Cloth dyed in this laborious fashion is used for the upper part of *tameins* (women's skirts).

In Tavoy, the bark of the *pinlèkabwe* (*Careya arborea*) is powdered and boiled till two-thirds of the water have evaporated. The remaining one-third is poured off into another chatty and cotton or silk boiled in it. Washed out with cold water, a red brown results. No mordant is used. If a little lime is added, a deeper shade is obtained, increasing with the amount of lime.

The *pyu* (ပြုပင်), the inner red fibrous portion of the bark of *sappan* wood, is cut into pieces about the size of the middle finger; these pieces are boiled till two-thirds of the water have evaporated. The silk or cotton is

boiled in the remaining one-third and then washed in cold water and dried in the shade. The addition of lime adds to the depth of the colour.

The *thabyu* (သပြု) bark, prepared in the same way as *pyu* (ပြု), gives a pale strawberry colour. Lime added gives a brick-red.

Padauk, *lettők* (လက်ထုပ်), *kabyaing* (ကပြိုင်), or *madama* (မဒမ) when similarly treated give similar results, lime in every case deepening the shade.

Madama (မဒမ) or *kabyaing* (ကပြိုင်) grows in profusion in Lower Burma along tidal creeks, and is largely used for fire-wood. In Upper Burma it sells at ten annas a viss and is often used as a mordant for turmeric (saffron, နနွင်း) and other dyes.

Malaka (မာလကာ), the botanical name of which is unknown, but which is not the *Psidium guava*, is pounded and soaked in water for three days and strained off.

Pyu and *malaka* are principally used for dyeing fishing nets. The colour is not fast and the nets require re-dyeing every fortnight.

In Lower Chindwin district the bark of the *palan* tree is cut into small pieces and boiled till two-thirds of the water have evaporated. The remaining one-third is poured into a large basin to cool. When cool, white cotton is immersed and dried in the sun. The operation is repeated three times a day for three days, and a pale red results. To fix the colour, the material dyed as above is soaked in an infusion of sessamum stalk ash.

Blankets called *thitkauksaung* (သစ်ခေါက်စောင်) are made of cotton dyed in this way.

Cotton dyed with the bark of the ဗြည့်စင်ပင် (*Antidesma paniculata*) in the same way gives a similar colour.

In Pyawbwè, Yamèthin district, a solution of *nabe*, *palan*, and *suyit* barks gives a dark red.

In Thayetmyo, the *tè* fruit are pounded and boiled and the decoction used for dyeing fishing-nets and umbrellas.

In Tharrawaddy, a decoction of teak leaves is used to give a red, but it is not permanent.

A reddish tinge is given to yellow in Tharrawaddy by soaking turmeric dyed cloth in a solution of *nadama* bark.

In Amherst, the *zylocarpus* (ကြံနီ) bark gives a red dye.

In Shwebo, the bark and leaves of the *nabu* are boiled till two-thirds of the water have evaporated. The remainder is strained off and cotton or silk dipped in it becomes red.

A reddish brown is obtained in Amherst from a decoction of the kernel of a wild mango (ဆင်နှင်းသရက်).

C.—*Yellow*. (အဝါ).

Chipped heartwood of the jack is boiled for two hours till two-thirds water have evaporated. The remainder is strained off and the cloth immersed and hung in the sun to dry. A light colour results, which is darkened by repeated immersions.

A solution of alum is used to fix the colour. A greenish tinge is obtained by immersing the jack-wood dyed cloth in a decoction of powdered *daukyat* leaves (ေထာက်ရိပ်), or else by sprinkling *daukyat* juice over the cloth and beating it in by hand. The bark of the *tauksha* (ေတာက်ရှာ) is also used with the jack-wood to give a light green colour.

A red tinge is obtained by mixing fig tree bark with the jack-wood.

The bark and sapwood of the *thingan* were formerly used for dyeing the robes of Buddhist monks (သင်္ကန်းအဝတ်), but this tree is now reserved, and dyeing with it is no longer carried on.

Silk or cotton, soaked in a solution of plantain ash and then in a solution of saffron, gives a yellow, which is darkened by mixing lime with the turmeric.

In Tavoy, the root of the *nyaw* (ညော), *Morinda exserta*, cut into small pieces, is boiled till half the water has evaporated, when the remainder is strained off and yarn boiled in it for a short time, then allowed to cool gradually, and, when cool, washed out in cold water and dried in the shade. The colour is fast. If ground turmeric is added to the *nyaw* decoction (one part turmeric to three parts *nyaw*), the mixture boiled, and cotton or silk dyed in it as above described, a variety in the shade results, depending on the amount of turmeric.

A cream colour is obtained from the *satthwa* (ဆပ်သွား) prepared in the same manner as *nyaw* (ညော). No mordant is used.

Thayetngapyaung (သရက်ငပြောင်) bark, boiled and prepared in the same way, gives a khaki colour

In Pegu, the bark of the *taungthale* (တောင်သလဲ) boiled gives a light yellow colour, and the same is obtained in Pyinmana from a decoction of *yon* (ယုန်း) bark and leaves.

In Tharrawaddy, Pakôkku, and elsewhere a yellow is obtained from a decoction of fine shreds of cocoanut bark.

A reddish yellow (ေကျဉ်ဝါ) is obtained in Mandalay by taking silk dyed orange and dyeing it in safflower (ဆူးပန်း) and a little indigo, with lime juice or alum water as a mordant.

D.—*Black* (အနက်).

In Pyinmana, Tharrawaddy, and elsewhere *mǒn* (မုန်ညင်း) fruit are well pounded and soaked for two days in water in which is mixed earth-soap ; cotton or silk is immersed in this and dried. The operation is repeated three times daily for six days to obtain a dull black.

In Tharrawaddy, the cloth is soaked in an infusion of pounded *panga* (ပန်ခါး) and *thitsein* (သစ်ဆိမ့်) fruit, and dried in the sun. The soaking and drying are repeated three times. Finally the cloth is immersed in swamp mud or an infusion of iron filings. A good black is obtained.

In Mandalay, the procedure is to immerse silk in an infusion of rusty iron, bitter rice-water, and pounded *dandèthi* (ဒန့်သလွန်း).

In Prome, a solution of pounded *panga* fruit, jaggery, heated iron, and vinegar gives the same effect. Decoction of *sappan* wood (ထိန်းညက်) will improve the colour.

In Magwe, a fast jet black is obtained by boiling powdered *madama* bark in water (30 *ticals* to 2 quarts of water) till half the water is evaporated and in the remainder immersing cotton twist three or four times. One part *zibyuthi* (ဆီးဖြူသီး), two parts *panga* fruit, and one part rusty iron are then mixed in water and placed in the sun for three or four days till fermentation sets in. Then the cotton, dyed as described, is immersed in this several times.

In Tavoy and Lower Burma generally, *kyazu* fruit (ကြံ့ဇုသီး) gives a similar dye. The fruit is boiled till the hard shell softens, a handful of iron filings is added, and the chatty placed in the sun for six or seven days. The liquid is strained off and silk or cotton immersed. The colour is not fast.

In Rangoon, the cloth dyed in the pounded *kyazu* fruit infusion is dipped in a solution of jaggery and heated iron (one and half viss jaggery and three viss iron in eight gallons of water). This solution takes fifteen days to mature. A deeper black is obtained by repeating the immersions.

Another process is to mix powdered *kyazu* fruit and iron filings, boil in palm-vinegar and water till half has evaporated. Sometimes a decoction of *Amarantus spinosus* (ဟင်းနုနွယ်) is added.

In the Lower Chindwin district a black dye (သံချေး) is obtained by mixing chips of *palan* and *yôn* bark in equal parts and boiling till two-thirds water have evaporated. The remainder is strained off in a separate chatty. Cotton is immersed and dried in the sun. This process is repeated three times a day for three days.

Cotton thus dyed is soaked for three days in a liquid prepared by mixing dry *panga* and *zibyu* fruit, reduced to powder, and old iron in country vinegar made of rice-water.

A dark brown (အညို) in Lower Chindwin is obtained from the leaves of the *saukpin* (ဆောက်ပင်), a species of coffee wort generally found in marshy places. The leaves are boiled till two-thirds water have evaporated. The remainder is poured over white cloth (ဖြင်) till thoroughly saturated, then hung in the sun to dry, and at night soaked in muddy water. Continuing the operation for four days a dark brown is obtained.

In Tharrawaddy, a dark grey is obtained by dyeing cloth, already dyed in *thidin* (သီတင်း) and lac (ချိပ်), in a solution of iron filings, *panga* fruit, jaggery, and cutch (ရှား).

A similar effect is produced by soaking cloth dyed in a decoction of the bark and leaves of the *taukkyan* (တောက်ကြံ့) in swamp mud. The mud, which acts as a mordant, must be quite free from sand. This process is followed for dyeing fishing-nets. The dye is not permanent, but is used when cutch is not available, though it is doubtful whether it has the same beneficial effect of preserving the cotton.

Cloth dyed with *madama* or with *te* (တည်), at first red, turns black if the bath in the dye is repeated.

In Thôngwa, the *tamayauk* (တမာရောက်) is also used for dyeing cotton black.

Cloth dyed red with *nabu* (နဘူး) becomes black if soaked in an orange liquid prepared by mixing molasses (ထန်းလျက်) and heated iron in water, and allowing to stand for ten days. To obtain a fast black and to prevent chemical rot, the cotton must be washed at once in clear water.

The *tamazók* bark (ထမင်းဆုတ်) is used for dyeing nets black.

Lein (လိမ်) bark is used in the same way.

The bark *lamu* (လမု), which grows in great profusion in tidal creeks, is used for giving a black colour to Turkey red.

Violet (ဒိုးကြိုးရောင်) is obtained in Amherst from an infusion of equal parts of *madama* and (ပါတကာသပြေ) *pataga thabye*, a species of *eugenia*.

E.—*Orange* (လိမ်မော်ရွေး).

In Tavoy, *durian* ash, which acts as a mordant, is mixed with an infusion of *thidin* seeds (arnotto) (1 lb. ash for 1 viss silk). Yarn boiled in this acquires an orange colour. Chalk (မြေဖြူ) added (10 ticals for every viss of silk) darkens the tint.

Thidin seeds (သီတင်းစေ့) used alone do not give a permanent dye.

In Mandalay, earth-soap is used to make the colour fast and brilliant. Knead fifty *ticals thidin* seeds in a solution of twenty *ticals* earth-soap and a light orange is obtained.

In Pegu, the same result is obtained by using powdered alum and ash of plantain leaf instead of earth-soap.

Another shade is obtained in Mandalay by mixing turmeric (နနွင်း) and *thīdinhmón* (သီတင်းမှုန့်) (fifteen ticals *sanwin* to five *thidinhmón*) in water, and immersing in this the silk previously soaked in a solution of plantain ash.

This colour is said to be fast and not affected by washing.

Thidinhmón is the red mealy powder that covers the capsules of the *Rottlera tinctoria*. It is only used in combination with turmeric. It comes from the Shan States.

F.—*Green* (အစိမ်း).

(*a*) Produced by mixing yellow (အဝါ) and blue (အပြာ).

(*b*) From green dye plants.

(*c*) Dye first in *nyaw* (ညော) and turmeric (နနွင်း), and then in *mègyi* or *mègale*.

Dye first in *nyaw* alone, and then in *mègyi* or *mègale*. The depth of green depends on the number of immersions in indigo.

In Myingyan, a green is said to be obtained by dipping the article dyed black in an infusion of *zithi* (ဆီးသီး) and alum water (ကျောက်ချဉ်), the depth of green depending on the strength of the black dye.

In Mandalay cotton or silk dyed orange in *sanwin* and *thidinhmon* is dyed green in an indigo solution.

(*b*) An infusion of the leaves of the *thinbawmebin* (သင်္ဘောမဲပင်), a species of the indigo plant, treated in the same way as the blue indigo plant, dyes cloth green. Lime added gives a deeper shade.

The leaves of the papaya (သင်္ဘောပင်) are macerated in water ; yarn dipped in the infusion obtained and boiled till half has evaporated acquires a dark green colour: (four viss leaves are used for one viss yarn).

The *Amarantus spinosus* (ဟင်းနုနွယ်), prepared in the same way, also produces a green, and so does the *gwedauk* (ဂွေးတောက်), prepared in the same way. The latter colour is not fast.

The *thinbawmezali* (သင်္ဘောမဲဇလီပင်), prepared in the same way, also gives a green, which is deepened by the addition of lime.

G.—*Pink* (ပန်းရောင်).

The safflower (ဆူးရှုပန်း) grows wild all over Upper Burma. The flowers are gathered and washed till they are cleared of a yellow exudation, then soaked and kneaded, till all the pink colour is expressed, in a solution of earth-soap or plantain ash. Silk immersed in this acquires a pink colour.

A reddish pink is obtained in Henzada by taking three viss of safflower that has been cleared of the yellow matter and steeping it in water slightly coloured with indigo. When the safflower has lost all its colour, strain off and mix with a solution of pounded *zithi* (ဆီးသီး). In this immerse the silk. The dye is said to be permanent.

A light pink is obtained in Mandalay by dipping the silk dyed orange in a solution of safflower mixed with a little lime or *kinbun* juice or alum water (one *tical* of these for every viss of silk).

H.—*Purple* (ကြက်သွေးရောင်).

Cloth dyed red with *thitkauk* and lac and again dyed in indigo becomes purple.

Colour-printing.

Colour-printing on cotton and silk, only recently introduced into Burma, was first practised at Mandalay by the Manipur Mahommedans, the descendants of those carried off into captivity by the Burmese kings.

The cloth, thickly plastered with lime starch, is spread over a stool in front of the operator, who squats on the floor. The stamp employed—a small board, in size and appearance much like an old shoe-brush—is pressed on a colour pad and then on the cloth, the result of each application being a band of wavy red stripes, about nine inches long and four inches broad, the direction and continuity of the stripes between one pressure and the next being only guided by the eye. Narrower stripes of green and purple are afterwards interpolated by a second and third series of operations.

Checks of various colours can also be printed on cotton or silk. Usually old clothes only are treated in this way.

Another process is adopted for the re-dyeing of turbans and *pawas*. The web is stretched between supports. An implement consisting of a small board stuck over with short pegs of bamboo in the pattern of the desired spots is dipped in a vessel of melted bees-wax and applied to the cloth. The wax penetrating forms a spot on both sides as a resist against the action of the dye. The web is then passed five or six times through an

infusion of aniline dye and, after being dried, is washed in hot water. The wax melts off and the white spots appear. These spots can be painted by hand as desired.

A white flower pattern is obtained in the same way.

Flowers can be stamped on the cloth, some juice (ထဓါဝေး) of the *tragacanth* tree being mixed with the aniline dye to give it a consistency and prevent it running.

The charge for re-dyeing a *lungyi* is usually one rupee, a handkerchief with white flowers, or spots, four annas, and with coloured flowers four to eight annas.

The method of polishing the material after dyeing is the same in all cases. The silk or cloth is first thoroughly dried, then wrapped round a hard wooden roller and covered with a thin cloth. The roller is then placed on a heavy polished wooden slab; a similar slab, having two projecting ridges on the upper surface, is placed upon it.

The operator stands on the upper slab and rocks it with his feet, holding on to a beam above.

The roller rapidly revolving between the polished wooden surface gives a gloss to the silk or cotton cloth.

Dyeing with indigenous dye-stuffs is, as an industry, almost extinct. A few families here and there still earn a precarious living as dyers, but their number is rapidly diminishing.

In the Lower Chindwin district the process of dyeing cloth red with madder for the upper part (အထက်ဆင့်) of *tameins* takes upwards of thirty days to complete and the profits are practically *nil*:—

	Rs. A. P.	Rs. A. P.
Six pieces dyed cloth	......	9 0 0
(*a*) Cost of six pieces white cloth ...	6 0 0	......
(*b*) Six viss of madder	0 3 0	......
(*c*) One viss of *nibase-gale*	1 0 0	......
(*d*) Sixty *ticals* sessamum oil ...	0 8 0	......
(*e*) Salt earth or ashes	0 1 0	7 12 0
Profit		1 4 0

Buddhist robes (သင်္ကန်း) take four days to dye—

	Rs. A. P.
(*a*) Seven viss jack-wood enough for dyeing five *èkathi* (ဧကသီ)	0 10 0
(*b*) Coolie hire one man for four days ...	1 0 0
(*c*) Fuel	0 6 0
Total ...	2 0 0
Charge for dyeing five *èkathi* robes ...	2 8 0
Profit	0 8 0

The charge for dyeing—

One *thinbaing* (သင်းပိုင်), upper robe ...	0 4 0
One *èkathi* (ဧကသီ) ...	0 8 0
One *dugôk* (ဒုးကုဋ်) ...	1 0 0

Aniline dyes have displaced all other native products, except in places where there is no bazaar.

To conclude, dyeing in Burma is as rude as it was ages ago, and any improvement in colour, or production of a new one, has been rather a happy accident than the outcome of the application of rules of chemistry, and no better results can be expected till the properties of the various dye-stuffs are investigated and the natives taught how to turn them to practical use.

In a country where chemical science may be said to be unknown we naturally cannot look for any of those signs of progress which in Europe have marked the application of that science to the art of dyeing. Hitherto Europeans have not interested themselves in Burmese dye-stuffs. In India the manufacture of indigo has been brought as near perfection as possible, while in Burma the old methods of cultivation prevail and the indigo produced is of an inferior quality and totally unfit for export.

Dye plants of Burma.

Vernacular name.	English name.	Scientific name.
1. မဲကြီး (*mègyi*) ...	Indigo	*Ruellia indigofera.*
2. မဲကလေး (*mègale*) ...	...	...
3. မဲရိုင်းကြီးပင် (*méyaing-gyibin*).	...	*Indigofera.*
4. ကြက်ဆူ (*kyetsu*) ...	Castor-oil ...	*Ricinus communis.*
5. ကြောင်လျှာ (*kyaungya*)	Trumpet flower ...	*Bignonia Indica.*
6. သမဲ့ (*thamè*) ...	Not known ...	*Avicennia officinalis.*
7. ထနောင်း (*tanaung*) ...	...	*Acacia leucophlœa.*
8. မန်ကျည်း (*magyi*) ...	Tamarind ...	*Tamarindus Indica.*
9. ဟင်းနုနွယ် (*hinnunwè*)	Nepaul spinach ...	*Amarantus spinosus.*
10. သမင်စာ (*thaminza*)...	Not known ...	Not known.
11. ရှောက် (*shauk*) ...	Large citron ...	*Citrus Bergamia.*
12. ရှောက်ပုပ် (*shaukpók*)	Double-leaved citron	*Citrus torosa.*
13. ပလံ (*palan*) ...	Not known ...	*Bauhinia diphylla.*
14. တောက်ရပ် (*daukyat*)	Applewort ...	*Photinia serratifolia.*
15. ပေါက်ပင် (*paukpin*)...	Not known ...	*Butea frondosa.*
16. ဆီးပင် (*zibin*) ...	Junjube ...	*Zizyphus jujuba.*
17. အင်ကြင်း (*ingyin*) ...	Not known ...	*Shorea Siamensis.*
18. သစ်ယာ (*thitya*) ...	...	*Shorea obtusa.*
19. သီတင်း (*thidin*) ...	Arnotto ...	*Bixa orellana.*
20. ယမင်း (*yamin*) ...	Not known ...	*Aporosa villosa.*
21. သစ်ခေါက် (*thitkauk*)	...	Not known.
22. နီပါးဆေး (*nibase*) ...	Madder ...	*Morinda citrifolia.*
23. နီပါးဆေးကလေး (*niba-segale*).	Small madder ...	*Morinda persicaefolia.*

Dye plants of Burma.

	Vernacular name.	English name.	Scientific name.
24.	ကဗွဲ (ဘန့်ဘွေး) (*banbwe*)	Not known ...	*Careya arborea.*
25.	ထိန်းညက် (*teinnyet*)...	Sappan ...	*Cæsalpinia sappan.*
26.	ပြူ (*pyu*) ...	Mangrove ...	*Rhizophora conjugata*
27.	သပြူ (*thabyu*) ...	Water *dillenia* ...	*Dillenia scabra.*
28.	ပိတောက် (*padauk*) ...	*Padauk* ..	*Pterocarpus Indicus.*
29.	လက်ထုပ် (*lettók*) ...	Not known ...	*Holarrhena antidysenterica.*
30.	ကပြိုင် (*kabyaing*) ...	...	*Dalbergia glauca.*
31.	မဒမ (*madama*) ...	...	...
32.	မာလကာ (*malaka*) ...	...	Unknown, but not the *Psidium guava.*
33.	ပြည့်စင် (*byisin*) ...	...	*Antidesma paniculata.*
34.	နဘဲ (*nabè*) ...	...	Unknown.
35.	ဆူးရစ် (*suyit*) ...	...	*Acacia pennata.*
36.	ရှား (*sha*) ...	Cutch ...	*Acacia catechu.*
37.	မုံ (*món*) ...	Unknown ...	*Diospyros.*
38.	ပန်ခါး (*panga*) ...	...	*Terminalia tomentosa.*
39.	သစ်ဆိမ့် (*thitsein*) ...	...	*Terminalia bellerica.*
40.	တန့်တဲသီး (*dandèthi*)	...	Unknown.
41.	ဇံဇဲသီး (*sanzèthi*) ...	...	Do.
42.	ဆီးဖြူသီး (*zibyuthi*) ...	Otaheite gooseberry	*Phyllanthus longifolius.*
43.	ကြဇု (*kyazu*) ...	...	*Terminalia chebula.*
44.	ဆောက်ပင် (*saukpin*)	Spindle tree ...	*Elæodendron integrifolia.*
45.	ထောက်ကြံ့ (*taukkyan*)	Unknown ...	*Terminalia alata.*
46.	တမာရောက် (*tamayauk*)	...	*Rondeletia tinctoria.*
47.	ထမင်းဆုတ် (*tamazók*)	...	*Agyneia coccinea.*
48.	လမု (*lamu*) ...	...	*Sonneratia acida.*
49.	ပါတကာသပြေ (*patagathabye*).	...	*Eugenia.*
50.	တောသီထင်း (*tawthidin*).	Wild arnotto ...	*Rottlera tinctoria.*
51.	သင်္ဘောမဲ (*thinbawmè*)	Unknown ...	Unknown.
52.	သင်္ဘောပင် (*thinbawbin*)	Papaya ...	*Papaya carica.*
53.	ဂွေးတောက် (*gwedauk*)	Unknown ...	*Connarus speciosa.*
54.	သင်္ဘောမဲဇလီ (*thinbawmèzali.*	Winged cassia ...	*Cassia alata.*

Dye plants of Burma.

Vernacular name.	English name.	Scientific name.
55. ဆူးပန်း (*suban*) ...	Safflower ...	*Carthamus tinctorius.*
56. တမာ (*tama*) ...	Gum-arabic ...	*Tragacanthus.*
57. ထည် (*tè*) ...	Chinese date ...	*Diospyros kaki.*
58. ကျွန်း (*kyun*) ...	Teak ...	*Tectona Grandis.*
59. နံနွင်း (*sanwin*) ...	Turmeric ...	*Curcuma longa.*
60. ကြနန် (*kyanan*) ...	Unknown ...	*Zylocarpus.*
61. နဘူး (*nabu*) ...	...	*Combretum apetalum.*
62. ဆင်နင်းသရက် (*sinnin-thayet*).	Horse mango ...	*Mangifera fœtida.*
63. ပိန္နဲ (*peinne*) ...	Jack	*Artocarpus integrifolia.*
64. ထောက်ရှာ (*tauksha*)...	Chaste tree ...	*Vitex arborea.*
65. ညောင်ပင် (*nyaungbin*)	Fig	*Ficus Indica.*
66. သင်္ကန်း (*thingan*) ...	Unknown ...	*Hopea odorata.*
67. ညော (*nyaw*) ...	...	*Morinda exserta.*
68. ညောင်နီ (*nyaungni*)	Red *pipul* ...	*Ficus Indica.*
69. ဆတ်သွား (*satthwa*) ...	Unknown ...	*Pandanus odoratissimus.*
70. သရက်ငပြောင် (*thayet-ngapyaung*).	...	*Mangifera Indica.*
71. တောင်သလဲ (*taung-thalè*).	...	*Garcinia Roxburghii.*
72. ရုံးပင် (*yônbon*) ...	...	*Anogeissus acuminata*
73. အုန်း (*ôn*) ...	Cocoanut ...	*Cocos uncifera.*
74. လိန် (*lein*) ...	Unknown ...	*Terminalia bialata.*

Mr. H. G. A. Leveson gives the following account of dyes and dyeing in the Shan States :—

Dyeing in the Shan States.

" Dyeing as an industry is seldom or never the sole object of an individual or household. With the exception of indigo, the majority of plants used for dyeing are found wild. A considerable proportion of the indigo produced in the country is grown in odd corners of vegetable gardens, and only in sufficient quantities for the house to which it belongs. Where importations of ready-made garments have not found their way, and cloths are for the most part home-dyed, every woman may be said to be her own dyer. Economy of labour or materials is therefore not regarded, so that the process of manipulation varies greatly in different parts of the country, and, though the quantity and durability of a dye depend to a large extent on the exact proportion of the ingredients of which it is composed and on the length of time occupied in each



Photo-Block. Survey of India Offices, Calcutta, 1899.

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part of the process, these details depend greatly on chance and the fancy of the operator.

"Made-up clothing and Manchester goods, white and coloured, constitute a large portion of the annual imports into the Shan States; aniline dyes also are now imported in considerable quantities, and used in all parts of the country. So far east as Kēngtūng, tins of dyes of all colours are exposed for sale in every large bazaar, and even in Möng Hsing (now French territory) aniline dyes are in common use and superseding native productions. In the neighbourhood of all the large centres of population and trade, the ordinary Shan wears nothing but imported goods, so that dyeing as an industry is practised chiefly by the comparatively less civilized hill tribes, and by the Shans proper only in outlying districts. Thus the Taungthus and Taungyos, even in the Myelat, where Burma is within reach, are still very conservative in their habits of clothing, and wear, both men and women, indigo-dyed cotton. The scattered Yang tribes may be roughly divided into the Black Yang, who dye with indigo and dress in black, and the Red Yang, who dye with lac and dress in red and white striped smocks. The Shans of the Northern States and the Hköns or Eastern Shans of Kēngtūng wear, as a rule, either undyed or indigo-dyed home-spun; and among the hill tribes of Kēngtūng, the Kaw, Kwi, and Muhsö, nothing but indigo-dyed home-spun is ever worn. In Möng Nai or Mawkmai, on the other hand, home-dyed clothes are seldom or never to be seen, except on bazaar days when the Yangs come in from the surrounding hill villages, nor would many purely native-dyed garments be met with in a tour round the bazaars of the Inleywa lake in Yawnghwe State. Even in Möng Pawn, although indigo is grown on hills overlooking the State, foreign dye is imported and used; it is found to be more durable and not more expensive, as a single dip in the dye is enough, whereas with the native production several dips are necessary before a sufficiently deep colour can be obtained.

Indigo.

"Indigo is by far the most extensively used dye in the Shan States. Two varieties of the plants are recognized; both are known as *hun*, but the rarer small-leaved variety is distinguished by the name of *kan* from the more common broad-leaved plant; they are said to yield equally good dye. The plant appears to flourish most at high elevations and is grown extensively in the higher ranges of the Myelat (in the Pangtara, Loilôn, Kyawkku-hsiwan, Pangmi, and Hsamönghkam States) on the higher slopes of the Loi Hum range, the eastern watershed of the Pawn stream, which derives its name from the plant, and among the loftier ranges of the Kēngtūng State east of the Salween. Too much heat is said to be injurious to its growth. When cultivated in the lower valleys, it is usually planted in the shade of a tree, and even then, without careful tending, dies as a rule in the hot weather. When grown in the hills also, plots of ground are selected at the bottom of a steep-sided valley so as to afford shelter from the sun as far as possible, and in more open country the shady side of large trees or rocks is preferred. Protection is thus afforded also from heavy dews, which are said to injure the leaves. Much moisture is not considered desirable, and the plants are never either irrigated or watered, even in the hot weather. Brackish soil appears to be the most suitable, but as the plant is fairly hardy, the ground is not manured, although in favourable spots it may be kept under indigo for as long as ten or twelve years con-

secutively. It is never grown from seed; in fact it is often said by the unsophisticated to have no seed. At the beginning of the rains the shrub is cut down to the ground, the lower part of the stock is cut off and thrown away, and the upper part with the young leaves is planted in the ground. It is seldom grown sufficiently for plucking within a year, but during the succeeding rains the full grown leaves are plucked for use. A very well-grown plant is capable of sustaining as many as five pluckings in a year—once a month during the rains and once more during the dry weather—but two or three pluckings are considered a fair annual yield. At the beginning of the next rains it is again cut down, and the cuttings planted; the old roots also grow up again, but after three or four cuttings it begins to fall off in leaf-bearing power. A full-grown shrub has from six to twelve separate stalks and stands up to three feet high; if not cut down, it will grow higher, but is apt to straggle, and the leaves are as a rule poor. The leaves when plucked are placed at once in a large wooden trough and covered with water, where they are left till they are rotten, which takes from three to ten days, according to the weather and time of year. They are taken out, rubbed and squeezed into the water, and thrown away; slaked lime is added, roughly in the proportion of about three and a half viss of lime to fifteen of fresh leaves. Too much lime renders the dye poor; if too little is added, it does not mix properly; but the ingredients are never weighed, each individual trusting to luck and his own instinct as to the amounts required. The lime is thoroughly mixed and kneaded and the surplus water gradually poured away, the remainder being further strained through a fine woven basket. In this form it is sold in the bazaar, wrapped in leaves and of about the consistency of putty. As mentioned above the process of manipulation varies in different parts of the country. Thus in the Myelat the leaves are boiled instead of soaked in cold water, and in parts of Kēngtūng the leaves are first pounded in a mortar—they are always apparently treated when green—and lime is always added when the dye is produced on a large scale. When required for dyeing it is mixed with about twice its volume of water that has been strained through ashes and a little extra slaked lime, and left to stand for twelve hours, after which it is ready for use.

"Cotton is dyed either in the hank or woven in the piece; it is washed first in ash-water, which cleans it and makes it take the dye better, and then kneaded with the hand in the dye mixture and taken out again and dried, the process being repeated until the required shade is obtained. Here again individual fancy plays its part. In parts of Kēngtūng the dye mixture is lett to stand several days covered up in a cool secluded place, during which time no one is allowed to look at it, as by so doing the dye is said to be spoilt. Some fermentation or chemical action apparently sets, in as the mixture is not considered satisfactory unless it is seething and frothy. In some places it is put to dry in the sun; in others it is said that drying in the sun prevents the dye from taking properly; sometimes a darker colour is produced by adding solutions made by boiling down chips of the black varnish tree, (Shan ႁၵ်, Burmese သစ်စေး) or of the sappan (Shan ၽၢင်, Burmese တိန်းညှက်). Sugarcane juice is also added when cotton is not taking colour properly. Native liquor, the juice of the papaya fruit, or sessamum oil is also occasionally added. The oil is said to make

the colour brighter; the effect of the other ingredients is not known. Subsequent washing in a solution made by boiling the seeds of the *vin* (Shan, မၵ်ဝိၵျ်, Burmese ဖွန်နတ်သံသီး) is a method adopted in Kēngtūng to darken the colour, especially in dyeing Manchester calicos and drills. It does not appear to be necessary to fix the dye after the above treatment, but fixing processes of various kinds are very commonly adopted. Sometimes the dyed cotton is buried in wet clay for a few hours and then washed out. Sometimes solutions of the barks of the chestnut (Shan, မႆႉၵေႃႇ) or other trees (Shan မႆႉဝံ မၵ်ၶိုဝ်ၵ် သၢႆ မႆႉတွင်, Burmese ကသစ်, and other species not identified) are used for this purpose. The process does not appear to be wasteful, as the surplus dye stuff is left in the cauldron till next required, more ashwater or dye paste being added as found necessary; but, as mentioned in the preceding paragraph, where imported dye is available, the home production is falling out of use, the former being easy of manipulation and yielding more satisfactory results. As a consequence, the retail price of dye paste, which some years ago was from four to eight annas per viss, is now one and a half to three or at most four annas per viss.

"A party of Shans from Rangoon, connected with the indigo trade, visited the Loihun indigo country some few years ago and experimented with the plants grown there, boiling the leaves down by a process of their own. They are reported to have said that the Loihun plant was too coarse or wild, and would not yield sufficiently good dye to be worked at a profit. If this is the case, when the country is brought within the reach of a railway, it might be worth while introducing a more productive species of the plant with a view to supply local requirements and, if successful, for export also. Without a more authoritative expert opinion it is, however, not safe to say that the species now grown is unsatisfactory, as the method of treatment may possibly be at fault.

"Without carefully prepared statistics, it is difficult to gauge with any accuracy the extent of the outturn. Mr. Browne estimates ninety viss of soft indigo as the annual yield of two acres. From enquiries in the Loihun district I estimated fifty viss of green leaves per acre for each plucking. This would produce about twenty-four viss of soft indigo for each plucking, or from fifty to sixty viss per annum; but the figures cannot be taken as more than a rough approximation. Mr. Browne estimates the total annual output in the Myelat at 30,000 viss, which, at the rate of ninety viss from two acres, would imply an area of about 666 acres under indigo. The total area of the indigo gardens in the Southern Shan States, including Kēngtūng, would be about four times as great, or, say, 2,500 acres; but the data available are so scanty that it would not be safe to accept this figure as anything like accurate."

Lac.

Stick-lac is found in different parts all over the Shan States, but it seems to be only in Karen-ni that its production is stimulated artificially. Elsewhere, if a tree happens to be attacked, or settled on by the insect, the deposit is collected when it is found. The Red Karens, however, carefully foster the growth. The insects are grafted during the dry weather on the larger branches of such trees as experience has

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washes for colouring paper, for adorning the characteristic decorations so common in all religious festivals. Several other preparations are used for the same purposes; among others are solutions of the following:—

"(*a*) Red leaves of the *butea* (Shan, မႆၵဝ်, *mai kao*; Burmese, ပေါက်ပင်, *paukpin*).

"(*b*) Light red flowers of the roselle (Shan, ၽၵ်ꩬုံပူ, *hpak hsumpu*; Burmese, ချဉ်ပေါင်, *kyinbaung*).

"(*c*) Green fruit of the *nwapadi* (Shan, မၵ်သၵ်, *mak-hsak*; Burmese, နွားပတီး.)

"(*d*) Green leaves of a species of pea-vine (Shan, ထုဝ်တိပ်, *hto tep*).

"The colour is applied to the paper with a cloth, but no fixative is used."

Mr. T. H. Giles gives the following account of the dyeing processes of Karen-ni. Though every woman in Karen-ni prepares the dyes and weaves the cotton fabrics for the use of her family, yet—

"The dyeing of textile substances in Karenni can hardly be termed an industry as it may be in the Lake district of the Yawng Hwe State, where cotton and silk are largely dyed and woven into fabrics of characteristic pattern, often sold beyond the district.

"The materials used by the Karenni in dyeing cotton are found in forests and jungles near the villages, and are entirely vegetable, both dyes and mordants, with the exception of cochineal. Aniline dyes and dyed stuffs are, however, rapidly making their way. Even of the two blankets, the red and the yellow, used by the Talai, the ruling race in Eastern Karenni and Bawlakè, the red is entirely made of cotton bought ready dyed in Taungu. The yellow, however, still continues to be made out of cotton dyed with the simple materials at their disposal.

Talai dyes.

"The material used by this tribe are the *rhizonus* of turmeric which produce a yellow dye. The leaves of the *pèpasun* (ပဲပုဇွန်), a kind of bean much in use amongst the people as an article of food, produces a beautiful pale but bright green. Cochineal, the dried body of a species of insect, the *coccus lacca*, produces a beautiful crimson and scarlet colour. This insect is very carefully preserved in Karenni for stick-lac, which is a large source of profit to the cultivator and the traders from Yawng Hwe, who are the chief purchasers.

"Indigo is not cultivated in Karenni, but the dye or the dyed stuffs are bought in the Loikaw and Loi Ngün bazaars. The mordants used are the leaves, bark, and roots of the *daukyat* (ထောက်ရှင်—*Simplocos spicata*) for fixing the crimson. The fruit of the *Phyllanthus embelia* (ဆီးဖြူ), the fruit of the *paw* (ပေါ), a species of the *terminalia* genus of plants, and the fruit of the hog plum are all used for fixing the green and yellow.

Karenni dyes.

"The colours employed in dyeing the cotton stuffs by the Red Karen are crimson, yellow, green, blue, dark and light, and black. All these colours, with the exception of the yellow, green, and black, are procured from the same sources as by the Talai tribe.

"The yellow is produced from a mixture composed of the *rhizonus* of the turmeric with the flower of the *butea* tree.

"The green is produced from a mixture of the ၃ဠိန်, a kind of bean, mixed with a small quantity of turmeric.

"The black is produced from the leaves of the ဆီးဖြူ tree (the thorns of which are used by the *póngyis* for brushing the teeth), after being soaked in a decoction of which the cotton is put into a buffalo wallow.

"*Mordants.*—The mordant used for fixing and making permanent the crimson dye produced from the lac is the fruit of the *Phyllanthus embelia*, the fruit of the *gwe*, a species of the *terminalia* genus, and the fruit of the (ဗုံးမသိန်) *Bommathein*, the hog-plum. The latter is said to be much more trustworthy than the others.

For fixing the yellow dye, the leaves and stalks of the camphor tree (*Laurus camphora*) are used.

For fixing the green no mordant is used; the use of a small quantity of turmeric is said to act instead. No mordant is used to fix the black; placing the cotton in a buffalo wallow for a night or two is found sufficient.

"The characteristic dyes of the *Brè and Padaung* are :—

Brick-red.—This dye is produced from the root of a tree called by the Brès *sawku*, said to be found only in portions of the Brè country and near Tithasaw in Taungu district; the tree is said to be large with big leaves. I could not obtain the Burmese name; but I believe it to be the *teinnyet* (တိန်းညက်), the *sappan* tree, from which madder is produced.

Yellow.—This dye is produced from the kernel of the nut of the *padè* tree (Burmese name not known). The nut is said to be round, of a yellow colour, with a kernal inside, and is grown by the villagers of Tha-aw and Prisa for the dye obtained.

No mordants are used and are said not to be needed.

Dyeing processes : crimson.

"In the case of the Talai tribe the cotton to be dyed is carefully rubbed and combed to remove all extraneous matter, and then dipped in a mordant prepared from the *daukyat* tree, the leaves, bark, and root of which are taken from the tree and cut up into small pieces, placed in a pot with a quantity of water, and boiled. This process produces a concoction of a sour, bitter, taste, into which the cotton is dipped, till thoroughly impregnated, and then placed in the sun to dry. The Karennis prepare their cotton in the same way, but in place of the *daukyat* take the fruit of the *zibyu*, *gwè*, and *pauka* trees, which they pound, place in a pot, and pour water on. When this has stood for some time, the cotton is left in the liquor for a night and is then dried in the sun. Both tribes effect the dyeing in the same way.

"The lac is taken from the tree, kept till dry, and then pounded in an ordinary paddy mortar to a fine dust. This is then taken out and placed in an ordinary wicker or cane basket, the bottom of which is covered with straw or cotton-seed to act as a filter. On this lac dust, which must be pressed down, is then poured water, which filtrates through the bottom of the basket and is caught in a pot. This is the dye ready for use. The first water to filter through is considered the best. The prepared cotton dyed is placed in the dye till the desired richness of tone has been obtained, and is then taken out and placed on a frame in the sun to dry.

Brick-red.

"The root of the *sawku* is dug up and sliced into small pieces, which are placed in a mortar and pounded. This is then sifted, and the powder and small particles are placed in a bamboo (*kyedauk*), with the cotton to be dyed, and water is poured on. The bamboo is then placed over a fire and scorched. This brings the colour out. When the tint required is obtained the cotton is dried in the sun.

Yellow.

"The Talai place the tubers or *rhizonus* of the turmeric plant in the sun to dry, then cut them up into small pieces, and pound in a mortar with the fruit of the *zibyu* (*Jujube*) and *gwè* trees, till all has been reduced to a fine powder. This powder is then placed in a pot with the cotton to be dyed and watered. The cotton is allowed to soak for four or five days, then taken out, washed in fresh water, and starched with rice water to give it substance and placed in the sun till dry, when it is ready for the loom.

"The Karenni tribe produce their yellow, which is more of an orange than the pure yellow of the Talai tribe, as follows :—

"The tubers of turmeric are taken green, sliced up, and mixed with a small quantity of flowers of the *butea* tree. This mixture is placed in a mortar and pounded to a powder. A small quantity of this powder is rubbed into the cotton to be dyed and the cotton is then placed in the mortar, covered with some of the powder, and lightly pounded till it takes the colour. It is then taken out and dried in the sun, before it undergoes the fixing process, for which the ashes of the leaves and stalks of the camphor tree (*Laurus camphora*) are used ; these are placed in a basket, pressed down, and water is poured on. The water which filters through is caught in a pot, and the dyed cotton is soaked in this for a day and then dried in the sun.

"The Brè and Padaung tribes produce the yellow they use from the nut of what they call the *padè* tree. This nut is yellow and contains a kernel which is extracted and pounded to powder in a mortar; water is added to the powder and the cotton is boiled in this till the proper colour is obtained; no mordant is used.

Green.

"The Talai tribe pound the green leaves of the *pèpasun,* add some water, and leave the cotton to soak for four or five days. It is then rinsed in clean water and a decoction of the powdered fruit of the *zibyu* is used as a mordant. The Karenni process differs somewhat. They take the leaves of the same bean plant and add turmeric, before pounding the whole to a green mash. Water is added, and the cotton is stirred about till the depth of colour is right. No mordant is used. The Brè and Padaung have no green dyes.

Black.

"The Talai tribe use no black. The Karenni produce their black, which is not of a very deep tint, in the following way,—The green leaves of the tree called by the Burmese *tapu* (ထပူ), by the Shans *maisi* (မႆသီ) are pounded to a mash and water is added. In this decoction the cotton lies for a night and is then left in a buffalo wallow for from twenty-four to thirty-six hours. No mordant is used.

"The Brè and Padaung tribes, although a black stripe appears in some of their cotton clothes, do not produce a black dye themselves, but buy the cotton ready dyed from the Karenni.

Designs.

"In designs and blending of colour the tribes of Karenni are far behind such tribes as the Taungyo and Intha, both of whom produce head-dresses remarkable for their graceful design and harmonious blending of colour, to say nothing of the beautiful colouring of the *tameins* woven by the Intha women.

"The Karenni affect simply horizontal or perpendicular stripes of red, green, blue, yellow, and white, the blue being always next to yellow; but as the blue is invariably of a deep indigo it does not disturb one's colour sense so much as when the brightest green is placed next a brilliant scarlet-lake. Moreover, the women are as bad at weaving as the men are at cultivating the ground."

POTTERY.

There is reason to believe that the potters' art in Burma was at one time much more highly developed than it is now, and it seems probable that this was due rather to the Môns than the Burmans. It is true that there is nothing so ĕlaborate found, or has not yet been found, as the old Sawankalôk pottery of Siam, but the "Martabans," the "Pegu jars," were famous all over the East for many centuries. Sir Henry Yule quotes references to them as early as 1508, among others from Jarric, *Thesaurus Rer. Indic*, pt. ii, 389, "Vasa figulina quae vulgo Martabania dicuntur per Indiam nota sunt............Per Orientem omnem, quin et Lusitaniam, horum est usus." And Antoine Galland's Journal in Constantinople says: "Les Turcs en font un grand estime et acheptent bien cher à cause de la propriété qu'elle a de se rompre à la présence du poison." Pegu jars are still made and are still popular, but they are no longer exported even to India, where indeed they have learnt to make them.

Mr. Taw Sein Ko, from whose monograph on pottery and glassware most of what follows is taken, thinks that the potter's art came to Burma from China rather than from India, and this is supported by the fact that, in proportion to the population, there are more potters' villages in the Shan States than in Burma and that in many places, notably in Papun, the potters are emigrant Shans. There is, however, little doubt that the pottery of Burma, if it has not deteriorated, has certainly not improved beyond the level of excellence which it attained several centuries ago.

"The art of pottery is practised only during the dry-weather months, that is to say from December till the end of March. In the rainy season the potters follow other occupations, mostly agriculture. In the rice-growing districts of the Irrawaddy delta, Pegu, Twante in Hanthawaddy, and Bassein are the chief centres. Pegu is noted for its domestic pottery, and Twante for its glazed ware. 'Pegu jars' are manufactured at the latter place and are apparently of the same shape and size as the celebrated 'Martabans' referred to above, which are the prototypes of the 'Martabans' still made in Upper India. The vases and goblets or *sarais* manu-

factured at Bassein possess some artistic merit. Flower-pots, recalling somewhat the *trisul* emblem of Buddhism, are made in Bassein town, where the double potter's wheel is in use. In the Tenasserim division the sparseness of population and backwardness of trade are somewhat compensated for by the fineness and elegance of the pottery manufactured at Tavoy and Papun.

"The goblets of Tavoy (Figs. 7, 8, 9) are justly famous in the province. Their colour is black, and they keep the water deliciously cool. Many have to be filled with water from the bottom, which is provided with a funnel-shaped aperture. The water is decanted through the horn-like spout. For utility, fineness, and elegance, the pottery manufactured by Shans at Papun is unrivalled throughout the province, and it is a pity that its sale is not extensive because it is not widely known on account of the comparative inaccessibility of the Salween district. The report for the Salween district is appended below *in extenso*:—

"The clay used for pottery manufacture is found at Mètharut *chaung*, about ½ mile from Papun. It is of a bluish black colour when taken from the stream, but turns red when burnt, unless the green dye is put on.

"It is dug up and pounded in a wooden mortar with a pestle, and strained through a sieve made of bamboo, usually shallow, with the bottom perforated to separate extraneous matter.

"A little water is mixed up till it becomes tenacious and then rolled with both hands to the thickness of a finger and the length of one foot. This prepared clay is put round the rim of a wooden wheel-shaped circular frame, six inches in diameter, and a hollow bamboo is attached to the centre of the frame and inserted on a stick fixed to the ground.

"The wheel spins round and on it the clay is shaped by the hand of the potter with a piece of rag soaked in water.

"The goblets are made up in four parts and then left to dry. The outturn is estimated at five or six goblets a day, and they are sold at four annas each. About twenty-five or thirty are put at a time in an oven hollowed out in the ground and fired the whole day.

"The ornamentation on the goblets is effected by an instrument having a little wheel with sharp points secured to the bamboo.

"The manufacture of pottery at Mètharut and Naungla villages, though limited at present, is entirely in the hands of the Shans, and consists of—

		Nos.
Sheet I	Goblet	1, 2, 4.
	Tea-pot	3
Sheet II	Spittoon	1 and 3
	Finger-bowls	2
	Kaung liquor jars	4, 5
	Flower vases	6
	Sugar or pickle jars	7
	Water-jugs	8

Oil-cups are also turned out and used for lighting pagodas, manasteries, &c., during festivals.

"Pottery is said to have been first manufactured in Upper Burma. The tea-pots manufactured are of the same patterns as are common throughout the Shan States.



No. 1.



No. 2.



No. 3.



No. 4.



No. 5.



No. 7.



No. 8.



No. 6.



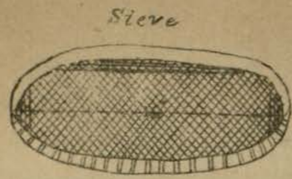
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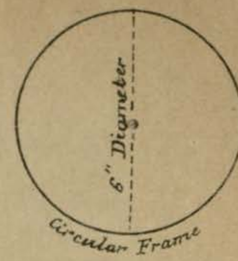


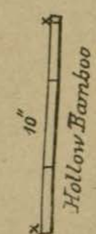
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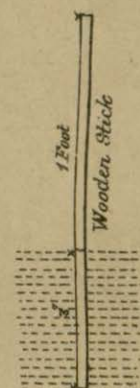
REPRESENTATIVE POTTERY OF LOWER BURMA

SHEET I.A

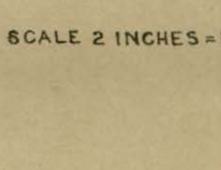






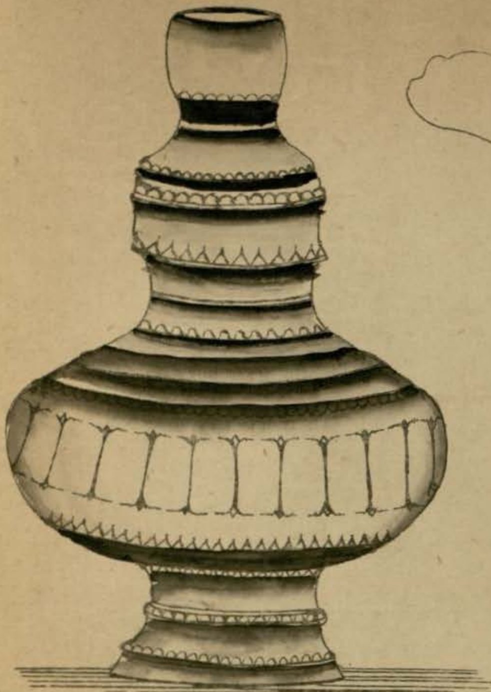


SCALE 2 INCHES = 1 FOOT.

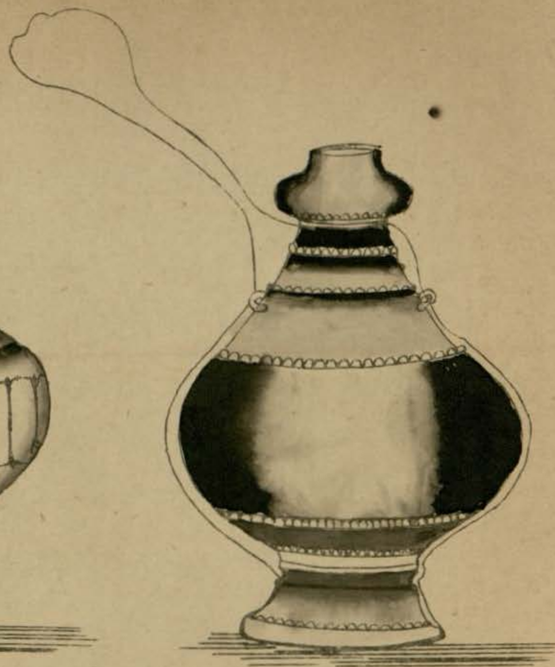


PAPUN POTTERY.

SHEET I.

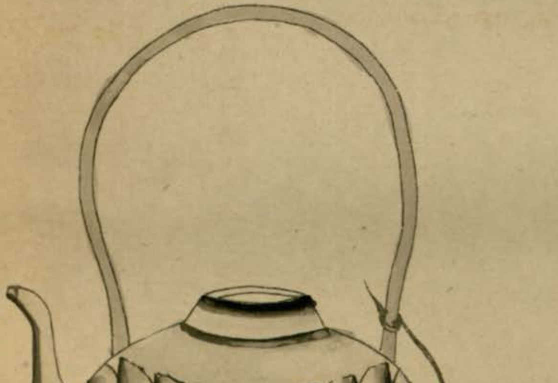


No. 1.



No. 2

SCALE. 4 INCHES = 1 FOOT.



No. 3.



No. 4.

PAPUN POTTERY

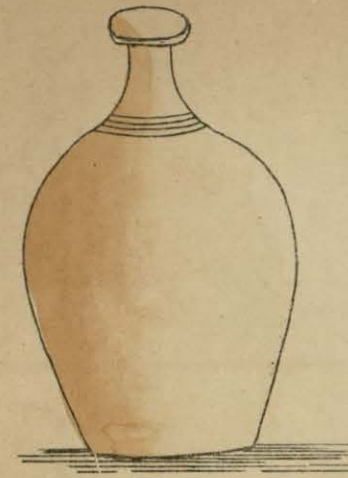
SHEET II.



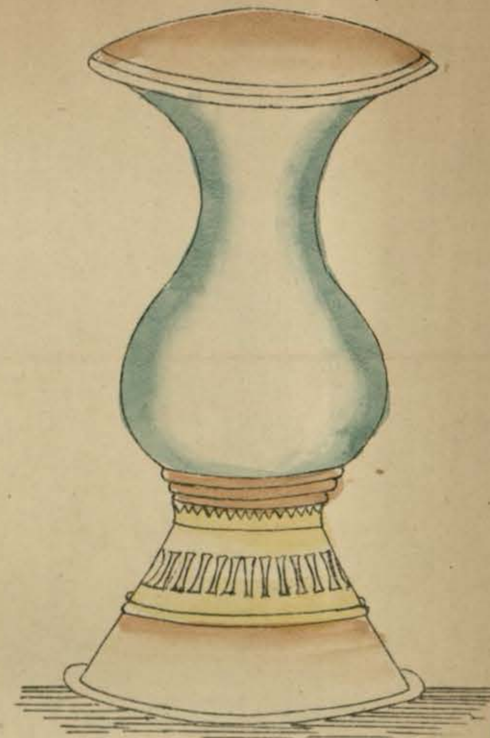
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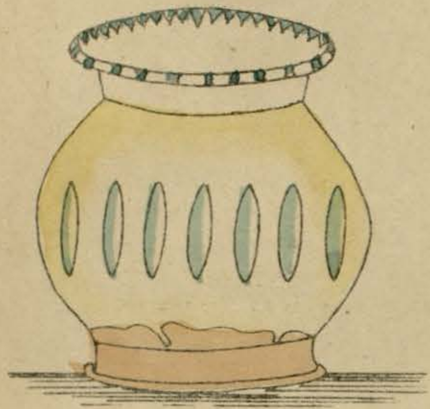
No. 2.



No. 5.



No. 6.



No. 3.

SCALE: 4 INCHES = 1 FOOT.



No. 4.

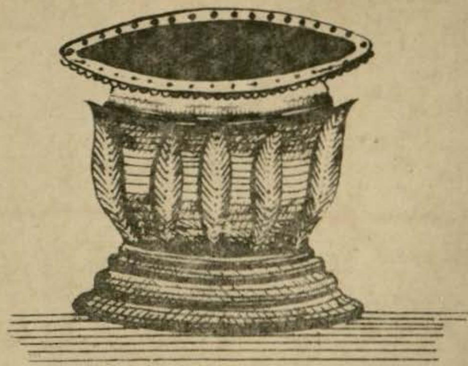
PAPUN POTTERY



No. 7.



No. 8

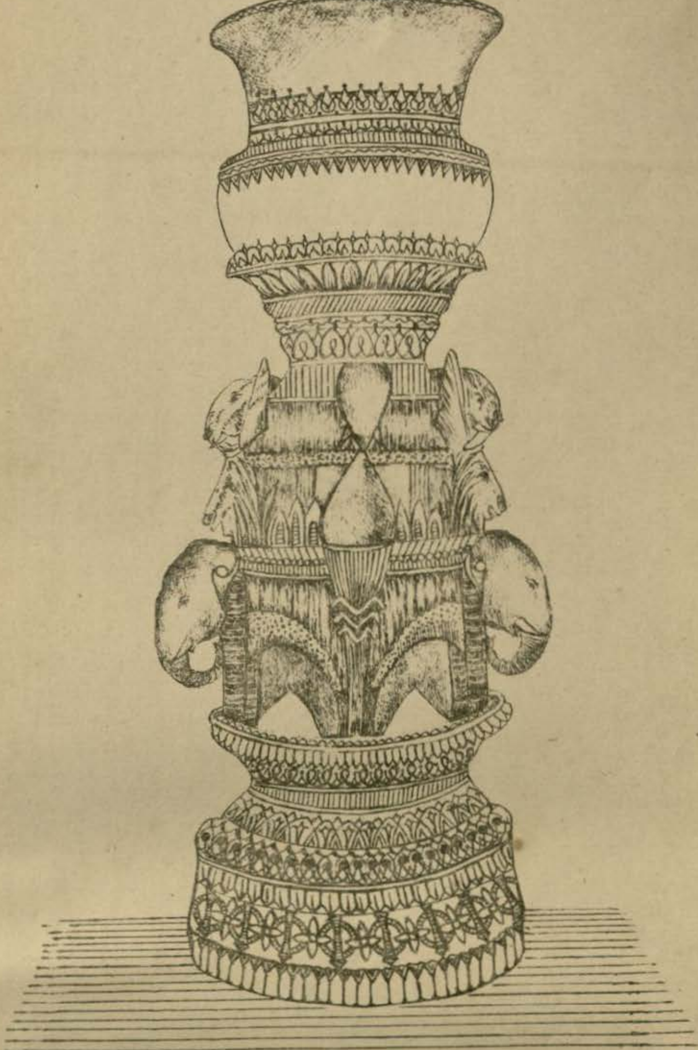


No. 14.

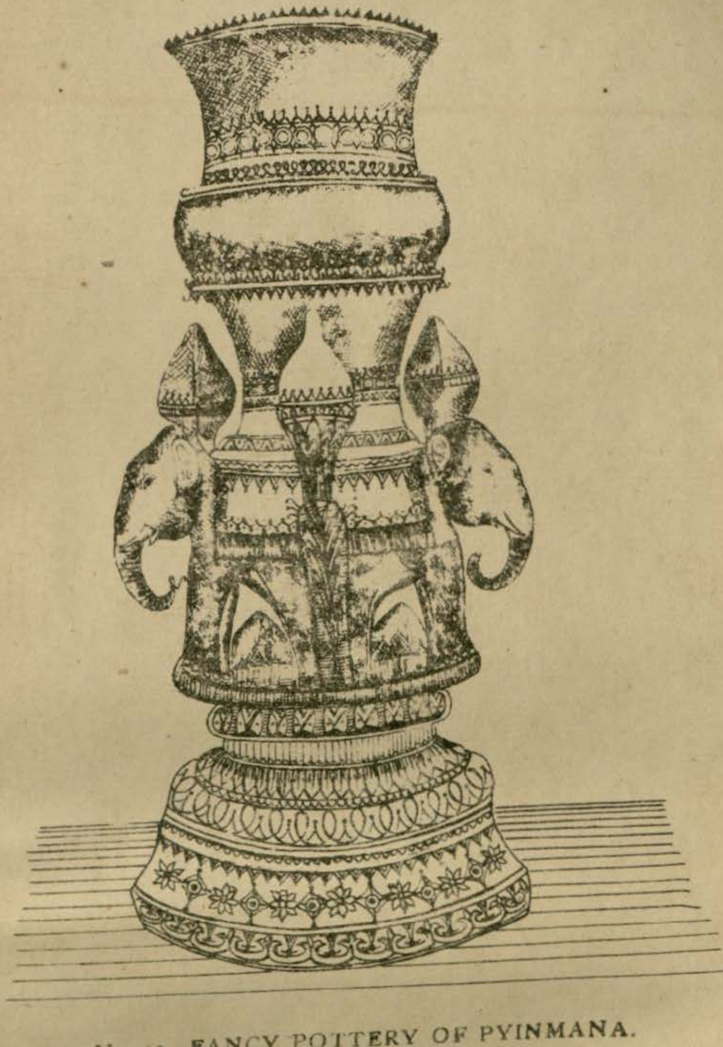


No. 15.

TOYS OF SHWEBO



No. 13 FANCY POTTERY OF PYINMANA.



No. 12 FANCY POTTERY OF PYINMANA.



No. 11 FANCY POTTERY OF PYINMANA.

"The town of Pyinmana is noted for its ornamental pottery (v. *figures 11, 12 and 13*). The clay used is of a darkish grey colour curiously mottled with rust-coloured spots, and is found on the banks of the Nagalaik *chaung*. Colonel W. F. H. Grey, Deputy Commissioner, writes:—

"'I forward three photographs showing different shapes in which these latter articles (flower-pots and stands) are made. To prevent mistakes it may be well to note that the stands and vases in the photographs are approximately one-fifth of the actual size.

"'The finished articles may either be dark, the colour of an ordinary Pegu jar, or a light yellow. To obtain the latter colour a thin coating of a material, which may be Fuller's earth or Kaolin clay, is smeared over it after it has been shaped and before the glazing is applied. It is at this stage also that patches of colour are applied for further ornamentation. These are obtained by rubbing on the surface of the clay pounded sulphate of copper or blue vitriol. After the final burning the parts so heated appear green on the yellow ground, a result which seems to afford pleasure to the native mind. Ornamentation more in accordance with Western ideas is effected by the tracing of more or less intricate patterns in lines and curves and sometimes in holes punched out of the still plastic material. The glaze is obtained by the application of pounded slag or metal refuse or ore mixed with rice-water till a viscid fluid is obtained, with which the whole surface is carefully coated before the burning. This final operation has to be conducted with great care and circumspection, the clay (unlike that used for ordinary pottery) being apt to crack and fly if it is heated either too quickly or unevenly.

"'It is somewhat surprising, considering the scarcity of the clay and the troublesome nature of the work, that the products can be sold as cheaply as they are. Flower-pots with stands, similar to those illustrated, can be purchased for Re. 1 to Rs. 2 each, but are only made now on receipt of wholesale orders.

"There are large pottery works at Singu in the Mandalay district, but no reports about them have been received. At Shwebo two kinds of clay occur, namely, red and black. The red colour is due, no doubt, to its ferruginous constituents, and the black to its containing organic matter. The toys made at Shwedaik in the Shwebo district are the finest in Upper Burma (Figs 14, 15). Pottery is also manufactured at Sagaing, in Lower and Upper Chindwin in the Central Division, and also at Pakôkku, Magwe, and Minbu in the Southern Division, but it possesses no special interest. In the Shan State of Hsawng Hsup, which adjoins the Upper Chindwin district white clay or kaolin is said to occur and to be utilized in making white pottery.

"In the Southern Shan States are situated the Bawzaing-Mawsön silver mines, from which the substance used in glazing, called *chaw* or *bwet*, is obtained. It is yellow in colour and contains 90·8 per cent. of lead, and is obtained as a residue in the process of extracting silver from argentiferous lead. Vitreous glaze is obtained by smearing green pots with a liquid mixture of this substance and clay or water in which rice has been boiled, and firing the pots in a kiln. To obtain a green glaze, blue-stone (sulphate of copper) is pounded up and mixed with the *bwet* and rice water. The pottery manufactured is crude and is intended for local use. There are

many potters' villages which use it in the States of Lawk Sawk, Möng Kung, and Kehsi Mansam, as well as far ther north. It is not prized in Burma Proper.

Owing to the use of the potter's wheel all forms of pottery are circular in shape, but the multiplicity of forms admits of being reduced to certain primal types. All ceramic utensils used in preparing food and drink and in holding water may be said to be derived from two types :—

"(1) A vessel whose prototype is of a shape similar to the well-known Indian *lota* ;

"(2) A vessel now represented by the *gamla* of Bengal.

"The *surahis*, *gharas*, and *châtis* are all traceable to the *lota*, while the *pialas*, *rakabis*, and *nands* are derived from the *gamla*. By an admixture of the two types the vessels used for holding water and other purposes may have either a narrow or wide mouth. The narrow-mouthed water jars carried on native carts and the jars used in carrying earth-oil at Yenangyaung are the chief representatives of the former of these subtypes. There is a curious folk-lore story in Arakan regarding the supersession of the narrow-mouthed jars by those with wide mouths. Appended below is the version of the story as given by Maung Myat Tun Aung, T.D.M., Extra Assistant Commissioner, in the Upper Chindwin district.

"'In Arakan we have two kinds of water-pots: one with a very small mouth and the other with a very wide mouth. It is believed that formerly only the small-mouthed kind was used and that the wide-mouthed kind was introduced under the following circumstances by the Burmese who invaded the country in the reign of King Min Zaw. This king was a very powerful prince, and the invaders could not find out the whereabouts of his capital, the present town of Sandoway, because, whenever, threatened by danger, it was capable of flying up to the sky and of remaining invisible to mortal eyes. All that the enemy could discover of it was the confused hubbub in the air. Now the king had a drum made of *padauk* wood. It was sounded three times a day and made so loud a noise every time it was beaten that it invariably produced a panic in Burma. Whenever the Burmese heard the noise they imagined that their country had been invaded by the King of Sandoway. This state of things was very irritating to the King of Burma, so he resolved to reduce his rival to subjection. He accordingly sent a very crafty ambassador to the Court of King Min Zaw. This ambassador found out the mysterious nature of Sandoway. He also discovered that the king was so much feared that up to that time no one had dared to look him in the face. The ambassador resorted to a stratagem. He directed his cook to boil some creepers in long pieces and bring them to him to eat when he next had the honor of dining in the king's presence. While eating them he took the creepers by the one end and raised them up high above his head and turned up his face to put the other end to his mouth. He thus succeeded in seeing the king's face and noticed that he had two tusks like those of a wild boar. The king himself was not aware that he had any tusks, so when the ambassador told him that he had a pair of tusks he was astounded. By means of this announcement the ambassador gained the complete confidence of the simple-minded Arakanese King. As time wore on, the ambassador one day told him that his power and glory would increase if he shortened the length of the drum, that treasures would be found

if trenches were dug in certain parts of the city, and that the king's tusks should be cut off. Further the ambassador resolved to pollute the water used in Sandoway, but was baffled in his nefarious project owing to the jars having narrow mouths. *He therefore advised the king to command the suppression of the existing jars by those having wide mouths, and the foolish king did as he was told by the wicked ambassador.* The result was that the king gradually lost his power, the city lost its power of flying, the water was polluted, and the country passed into the hands of the wily Burmans.'

"The form, shape, and size of pottery are determined by the use the articles are put to. Such uses may be broadly divided into (*a*) religious, (*b*) ceremonial, (*c*) domestic.

"The principal articles used for religious purposes are the flower vases generally met with on pagodas, the well-known black glossy alms-bowl of the Buddhist monks, and the little circular lamps lighted at the end of each Buddhist Lent. Much care and ingenuity are bestowed on the manufacture of vases and alms-bowls. The former is red ware, while the latter is black ware. The black colour is obtained by smearing the green pots with sessamum oil and baking them in huge jars.

"With the advent of Western civilization and its attendant luxuries and a higher standard of material comfort, the Burmans, in common with other orientals subject to British rule, have been obliged to study economy and to curtail their complicated ceremonials. Weddings are now not so expensive as they were before, but respectable families, especially in Arakan and Upper Burma, still observe the time-honoured custom of having the bride and bridgroom eat out of a common earthenware bowl. Such bowls are now not exposed to sale, but are made to order as occasion arises. This custom of eating together, which still prevails in China, reminds one of the ancient Roman custom of *confarreatio*. The custom of preserving in urns the charred bones of one's parents or ancestors and paying them the same adoration and devotion as is done to Gautama Buddha is dying out, as it is discountenanced by strict and orthodox Buddhists. Ancestral worship, which still prevails in India, China, and Japan, appears to be one of the primitive forms of faith in Burma. The kings of the Alompra dynasty showed their devotion to the manes of their ancestors by adoring their material representations in gold.

"The domestic utensils do not call for any special remark. They consist mainly of cooking-pots, water-jars, goblets, flower-pots, and lamps of curious shape, which are still used in places where kerosine oil has not yet been introduced. Tobacco pipes, which were largely used a generation ago are no longer manufactured and will soon pass into oblivion, to be objects of interest to the historian or the lover of antiquities.

"Earthenware pottery is of two kinds: (*a*) unglazed ware, and (*b*) glazed ware. It is a notable fact that the art of glazing is unknown in Bengal, and that it is not commonly practised in the Punjab. It is generally supposed that the art was introduced into India by the Moghul invaders from China through Persia. It is evident that glazing was practised in Burma centuries ago, and that it was acquired from the Chinese either directly or through the Shans.

Unglazed ware.

"Unglazed ware is manufactured from ordinary alluvial clay, mixed with fine sand and kneaded with the feet on a cow-hide. The prepared clay is made into balls or *pindas* of a size sufficient for making pots of the dimensions required. Each ball is put on the wheel whose history is more ancient than the days of Jeremiah and, when the desired size has been obtained, the green pot is cut off neatly with a string. It is then dried in the sun for a day and beaten into shape with a plain wooden mallet. During this process a wooden or earthenware mould is placed inside the pot to serve the same purpose as an anvil. Ornamentation now begins by beating it with mallets with floral or other patterns, and the blank spaces are smoothed over with the *gônnyin* seed (*Entada pursætha*). The green pot is now ready to be baked, but the baking is not carried out till a large number are ready. There is no proper kiln. The pots are completely covered with straw and the whole heap is coated with clay and fired. The fuel used is either bamboo or wood. The red ware is obtained by baking in the above manner. If black ware is required, bran is poured on the burning heap and the pots are coloured by the smoke. From 150 to 500 pots are generally baked together.

"The following figures give a rough estimate of the profit and loss of the industry. If 300 pots are baked, the cost is—

	Rs.
Clay	3
Straw	1
Fuel	3
Total ...	7

"The average value realized is about Rs. 3 per 100 pots, and the proceeds of the sale will amount to Rs. 9. The net profit will, therefore, be Rs. 2. A single woman would take about 15 days to make and bake the 300 pots, and the income of Rs. 4 a month is not very re-assuring. Besides, a liberal allowance of breakage, sometimes to the extent of 30 per cent., has to be made. Unless the clay and the straw and a good portion of the wood-fuel are obtained free of cost, the margin of profit will be considerably restricted, and the labour given will be merely a labour of love, which poor folks leading a hand-to-mouth existence can hardly be expected to indulge in too freely.

"Glazed pottery is a more profitable industry. There is less breakage, and each kiln will realize about Rs. 100. The only essential difference in the mode of manufacture is the smearing of the green pots with *chaw* or *bwet*. The following is a rough estimate of the profit and loss of the industry :—

	Rs.
Labour in digging up clay, and cartage...	25
Fee for pounding clay in a mortar ...	10
Cost of fuel	10
Fee to one foreman and two assistants ...	30
Total ...	75
Allowance for breakage ...	5
GRAND TOTAL ...	80

"The net profit will thus be about Rs. 20. Glazed toys are made by the family of the potter, and their manufacture entails no additional expense. The proceeds realized by their sale are a net gain.

"The glazed tiles and terra-cotta tablets are of antiquarian interest. They are found mostly at Tagaung, Pagan, Prome, and Pegu, the ancient capitals of Burma. A few specimens may be seen at the Phayre Museum, Rangoon.

BRASS-WARE.

The account here given of the brass and copperware of Burma is taken from the monograph of Mr. H. L. Tilly :—

"Brass is not widely used in Burma, and the articles made are chiefly associated with religious acts. The work naturally divides itself into that which is cast and that which is wrought.

"It is impossible to estimate how many people are engaged in this work. The whole of group 44 in the Census Report sums up to over six thousand souls; of these many are sellers only; others are employed in the Railway and other mechanical engineers' shops in the country. It would perhaps be safe to say that the Burmese workers in brass, with their families, do not account for more than half of the total number returned. In social condition they rank with other artisans, and as there are no hereditary occupations in Burma a brass-worker is as good as he proves himself to be. The founders, especially those who make images of Gaudama Buddha, have considerable technical knowledge and are well up in the traditions of their work, and require some capital, and are therefore of higher social importance than the worker in sheet-brass, who is neither an artist nor a very skilled mechanic. Since the annexation of Upper Burma, workmen in the brass trade have emigrated to Rangoon, attracted by the chance of better wages, but owing to competition with each other, and the growing acceptance of piece-work in lieu of daily wages, they have not benefited themselves, and have damaged the prospects of the older workers.

"The founders are very superstitious, or perhaps pretend to be, in order that they may be able to throw the blame of a bad casting on an unlucky day or a malignant spirit.

Cast brass-work.

"The method of working is very interesting, not only on account of its intrinsic cleverness, but also because it resembles the method of *cire perdu* said to have been re-invented by Benvenuto Cellini some centuries after it was practised by the Phœnicians.

"In principle it may be said to be the making of the article in wax, in every way, *i.e.*, in outward shape and thickness, like the object to be cast.

"This is done by first making a rough interior or core of clay somewhat freely mixed with sand and paddy-husk. This is coated with a layer of finer loam and brought to the exact size of the inside of the finished article. It is leeped with a fluid made of finely divided charcoal and horse-dung. A composition of bees-wax 10 parts, resin of the *in* tree 7½ parts (Burmese *indwè*, or resin from *Solanum melongena*), to which is added earth-oil at discretion, is melted down and thrown into a large shallow basin of water, and on cooling forms a layer of uniform thickness on the surface. It will be seen that this thickness is approximately that of the metal of the

image or bell. The sheets of wax are coated over the prepared core and are carved into the desired shape in all its details. It remains now to cover the wax model with sufficient clay to resist the weight and bursting pressure of the molten brass which is to take the place of the wax, and this is done as before by washing first with a leep, and then coating with fine mould, and finally covering all with a strong envelope of coarse clay, sand, and paddy husk. Proper provision has, of course, been made for ducts to lead in the molten metal and vents to allow the gases to escape. The paddy-husk is added to the clay on the same principle that breeze is added in brick-making; it is a fuel contained in the clay which will ensure the thorough converting of the whole mass into burnt clay, for the mould is now surrounded with a fierce fire and the wax runs out, leaving a hollow between the clay moulds. While this mould is yet hot, the molten brass is run in, and readily finds its way throughout the warmed hollow, filling up the space formerly occupied by the wax. Any one who is at all conversant with foundry work cannot fail to admire the ingenuity of this system. The casting is allowed to cool, and the outside clay mould broken off, and the work is finished with chisels, files, sand-paper, stone, and steel burnishers.

"Some handicraftsmen make the hands and ears separately and fasten them on with brass pins, and, if any fault is discovered, it is remedied by fitting in the required portion, but these practices are not viewed with favour by the best workmen.

Flat triangular gongs are made in an open sand-mould which has been formed with a wooden pattern. Cattle bells are formed by melting out a wax-mould, the clapper being placed in the core.

Alloys used in brass-founding.

The alloys used by different master-founders vary considerably. Thus—

For images are used	(i)	Copper	60
		Tin	40
	(ii)	Copper	53·4
		Tin	40·0
		Zinc	6·6
	(iii)	Copper	54·1
		Zinc	45·9
For large bells	(i)	Copper	57·1
		Tin	42·9
	(ii)	Copper	83·3
		Tin	16·6
For cattle bells		Copper	74
		Tin	26
For gongs		Copper	80
		Tin	20

Expenses and profits.

"Brasswork is sold by weight, and the rate depends chiefly on the weight of the casting, although some workmen will undertake to turn out more highly finished work at a higher rate. Large heavy castings may be had at from two rupees a viss (3·65 lbs.), whereas anything weighing a viss or less will cost five rupees a viss. In Arakan, where the mixed population wear brass jewellery, the following prices obtain :—

	As.		Rs.
Small bell-shaped ornaments are sold at from	5	to	1-8-0 per 100.
Armlets			3-8-0 per 1,000.
Ear-tubes			7-0-0 per 100.

"A custom has lately sprung of making images for a sum fixed beforehand, and when this is done the master-workman generally contracts with his men in the various departments of the trade. This custom is unfortunate, for, to begin with, the image is cast as thinly as possible, with many resulting blemishes and unsound places which are fraudulently concealed, and the work is scamped all round. Thus, after much bargaining with different image-makers, a Rangoon patron will succeed in inducing one of them to make him an image of five feet six inches high for Rs. 375. This is too little for so large an image, and the master, determined to get his profit out of a saving in metal, casts the image very thin and contracts with his men as follows:—

	Rs.
Modeller	45
Filer and fitter	85
Firemen	8
Founders	15
Total ...	153

"His other expenses amount to—

	Rs.
Metal	104
Charcoal	5
Teak for firewood	11
Food, betel, and cheroots and incidental expenses ...	8
Total ...	128

"This makes a total expenditure of Rs. 281, leaving a profit of Rs. 94, or about 25 per cent. But the work is full of blemishes, which are patched with clay within and brass without. Some years ago the cost of materials absorbed two-thirds of the price of the finished article, and now, in less sophisticated places, the villager pays by weight and the master-workman is satisfied with 20 per cent. profit. When the workmen are paid by the day, the modeller receives one rupee for each day on which he is employed, and the founder two rupees; three or four men follow the fortunes of each master, and extra hands are engaged when there is a rush of work

Tools and plant.

"The brass-founders' workshop is generally situated on the outskirts of the village and most of the work is done in the open, or, if under the shade of trees, or beneath the shelter of a mean shed, so much the better. He makes his own crucibles, the largest to contain a little over 120 lbs. of metal. His hearth is a hole in the ground fanned by Burmese bellows, which deserve a word or two of description, as they are used in many trades. They are of all sizes, from the tiny model of the goldsmith, which may be worked with the little finger, to the huge apparatus of the brass-founder requiring a man to each rod.

"The bellows are formed by placing vertically side by side two hollow bamboos plugged at the bottom. From just above the plugs two small bamboo pipes converge to the hearth, where they are connected by a fire-clay nozzle. The blast is formed by compressing the air in the tubes by an ingenious contrivance, which serves at the same time as a piston and as a valve for admitting air. Each tube or cylinder is fitted with a rod, at

the end of which is tied a bunch of cock's feathers with the quills upwards; when the rod is forced down, the feathers are pressed against the side of the cylinder by resistance of the air and an air-tight piston is obtained; when the rod is drawn up, the feathers trail downwards and the cylinder is filled with air from above. The rods are worked alternately, and, in all except the largest blowers, are connected at the top by a bar pivotted at a point between them, so that a reciprocating movement can be given by pushing up and pulling down one end of the cross-rod by means of a light bamboo. The combined piston and valve closely resemble those feather brushes used for dusting pictures at home.

"For fitting, finishing, and burnishing are used small chisels, files, drills, and hammers, many of them of English make.

Wrought brass work.

There is nothing particularly interesting in either the method of work or the article turned out. Spittoons, lime-boxes, the mouth-pieces, and bell-shaped ends of transports, cymbals, and other articles made of sheet brass are not ornamented, nor do the shapes possess artistic merit. Any difficulties of manufacture are overcome by the use of solder.

"Maung Shwe Waing, A.T.M., of Rangoon, describes the process of manufacture of a spittoon somewhat as follows: It is made of three different pieces of sheet brass of the required size—one for the upper, one for the middle, and the other for the lower part. The first and second parts are first joined together by means of solder or metallic cement, and then widened round the middle portion by placing that part on a piece of shaped wood and beating it into shape with a flat and curved hammer until it is roughly of the required size; the upper portion is then finished on a curved iron anvil with a bent neck. It is roughly cleaned within and without with files and scrapers, after which it is finished off in the lathe. When this has been done, the third portion, which constitutes the foot, is soldered in its place. The solder used is made of borax, zinc, and brass filings.

Tools and plant.

"The worker in sheet brass often makes the smaller cast brass articles, such as bullock bells; in fact, anything that is not beyond the output of small crucibles. These he places on a hearth formed of clay and sand confined to a depth of some inches by planked sides, and fanned by a small pair of bamboo tube bellows, or sometimes by bellows of English pattern.

"He uses shears and variously shaped anvils and is particularly partial to moulds or dies; that is, he will carve out a wooden block to the required size and shape and prepare also in a heavy block of wood a hollow mould of the same design, and, fitting his brass sheet roughly to the first, will place it in the second and quickly hammer it into shape, ready for the lathe. The latter is composed of rough wooden uprights secured to a heavy bed-piece, and the article to be smoothed and burnished is carried on a wooden roller suspended between centres and rotated first one way and then another by a boy with a piece of rope.

"The turning is often done by a separate craftsman, and he occupies his own spare time in making fancy handles for his chisels. These are of the ordinary European shapes and angles.

List of principal articles made of brass, with the Burmese equivalents.

Articles.	Burmese equivalents.
Basins for washing the hand ...	လက်ဆေးခံ (*letsegan*).
Beads	ပုတီး (*padi*).
Bells, large, without a clapper	ခေါင်းလောင်း (*kaunglaung*).
Bells, small, with clapper, such as are attached to the umbrellas of pagodas.	ဆည်းလည်း (*swèlè*).
Bells, the clapper of the same ...	ဆည်းလည်းဆံ (*swèlèzan*).
Bells, cattle	ခလောက် (*kalauk*).
Bells, worn on collars by animals.	ချူ (*chu*).
Betel-nut cutters ...	ကွမ်းညှပ် (*kunknyat*).
Bowls	ဖလား (*pala*).
Brass jewellery	ဝတ်ဆင်ရန်ကြေးတန်ဆာ (*wutsinyankyetazu*).
Chunam or lime-boxes ...	ထုံးဘူး (*tônbu*).
Covers of alms-bowls ...	သပိတ်ဖုံး (*thabeikpôn*).
Cymbals, large, used in the hands.	လင်းကွင်း (*lagwin*).
Cymbals, small, used on the toes	သံလွင် (*thanlwin*).
Cymbals, small, used when playing the harp.	စည်း (*si*).
Ear-picks	နားဖါကော် (*napagaw*).
Filter of a monk	ရေစစ် (*yezit*).
Frontlets for bullocks ...	နွားပေါင်း (*nwapaung*).
Gong, round	မောင်း (*maung*).
Gong, one of many in a musical instrument.	ကြေးနောင် (*kyenaung*).
Gong, triangular	ကြေးစည် (*kyezi*).
Images of Gaudama ...	ရုပ်ထုတော် (*yôktudaw*).
Rings	ကြေးလက်စွပ် (*kyeletsut*).
Scales	ချိန်ခွင် (*cheingwin*).
Steatite pencil holders ...	ကန့်ကူတံ (*kangudan*).
Stirrups	နင်းကွင်း (*ningwin*).
Spittoons	ထွေးခံ (*twegan*).
Spoons	ဇွန်း (*zun*).
Tweezers, flat	မွေးညှပ် (*mwehnyat*).
Tweezers, pointed ...	ဇာဂနာ (*zagana*).
Weights	အလေး (*ale*).

Tools used by brass workers.

Anvils	ပေ (*pe*).
Anvil with bent neck ...	ကောက်တိုင် (*kauktaing*).
Anvil with hollow on top ...	ဆူးခွ (*sugwa*).
Bellows	ဖို (*po*).

Article.	Burmese equivalents.
Bellows, bamboo tubes to nozzle of.	နှာတံ (*hnadan*).
Bellows, nozzle or tuyere ...	နှုတ်သီး (*hnókthi*).
Brass filings	ကြေးစ (*kyeza*).
Chisels	ဆောက် (*sauk*).
Crucibles	လုံ (*lón*).
Drill, the instrument ...	ထိုးဆူး (*tozu*).
Drill, the pointed part ...	ဆူးသွား (*suthwa*).
Files, four-sided	တံစဉ်း (*tazin*).
Files, curved	တစဉ်းကောက် (*tazingauk*).
Files, flat	တစဉ်းပြား (*tazinbya*).
Hammers	တူ (*tu*).
Lathe	တွင် (*twin*).
Lathe, rest for	ဆောက်သွားခုံ (*saukthwagón*).
Lathe, small, worked with bow	ပွတ်စင် (*putsin*).
Pincers or tongs	ညှပ် (*hnyat*).
Scrapers	ထိုက် (*gaik*).
Shears	ကတ်ကြေး (*katkyi*).
Soldering iron	ဂဟေတံ (*gahedan*).
Whetstone	ကြေးလုံ (*kyilón*).

Materials used.

Brass	ကြေးဝါ (*kyiwa*).
Copper	ကြေးနီ (*kyini*).
Lead	ခဲပုပ်॥ခဲမပုပ် (*kèbók, kèmabók*).
Pewter	ကြေးဖြူ (*kyibyu*).
Solder	ဂဟေ (*gahe*).
Tin	ခဲမဖြူ (*kemapyu*).
Zinc	သွပ် (*thut*).

Kammawa writing strips.

"This is the material on which the *kammavaça* and cognate Buddhist religious texts are written in Pali. It is exclusively manufactured at Tagundaing, a village forming the extreme eastern ward of the town of Amarapura. The strips, measuring about a cubit by two inches, are made of four folds of well-sized white chintz, gummed together by a black substance called *thitsi*, a wood-oil obtained from a tree of the same name.

"The outside of the fourfold strip is also well and evenly coated with the gum, which, while wet, is overlaid with vermilion. The result is a smooth plastic strip of writing material whereon the texts are written with the same gum; the commonest texts are the *kammavaça, sikkhapadam*, and *piritapotakam*, for presentation to the holy brotherhood.

"The character employed is a peculiar form of square Pali current in Burma, so written as to require practice to decipher it.

"When the text is complete the margin, which is left blank in Burmese palm leaf texts, is ornamented with artistic scroll work, for which liquid gold

is employed. A book of a dozen strips costs two rupees, and a larger one is charged proportionately.

Shan paper.

The coarse textured paper used by the Shans for their books and correspondence is made in many parts of the hills, wherever the tree from the bark of which it is made is found. This is the *maihsai-le* (မႆသႆလဵဝ်) of the Shans, and the *shaw-bin* or *sekku-shaw* (စက္ကူ၊ရှော်) of the Burmese. It is a species of mulberry and is perhaps most abundant and grows to its greatest size near the Salween. The Shans eat the flowers in the form of curry.

Perhaps the chief centre of the manufacture is in the outlying Kēng Lōng district of the Möng Nai State, not far from the Kaw ferry. Mr. G. C. B. Stirling gives the following account of its manufacture there:—

"The bark having been stripped from the tree, the outer brown portion is carefully pared off, leaving only the white inner bark. This is boiled in water for about a day, by which time it has assumed the appearance of dirty rags. It is then beaten with a wooden mallet till it has so lost its stringy bark character that any quantity can easily be detached by the hand. The paper manufacturer has a rough oblong bench so hollowed out on top as to hold about three inches of water. He has also a number of trays, made of coarse home-spun calico stretched on bamboo frames of the size of the sort of paper which is to be made. A favourite size is about two-and-a-half feet by two feet, but some are nearly six feet long by two-and-a-half broad. The latter are for making the strips of paper used by the Shans for sleeping upon when travelling, for which purpose the paper is made thicker than the ordinary kind. The manufacturer takes a small portion of the boiled bark, thrusts it into a short funnel of bamboo closed at one end, and half filled with water, gives it a few pounds with a short bamboo pestle with jagged spikes and pours it out over the frame, which he has previously submerged in the water in his bench. The stuff spreads itself out in the water after the manner of sea-weed, and a few dexterous pats do all that is wanting to distribute it evenly over the frame, which is then slowly lifted out of the tank, the water running through the calico, and the coating of paper only remaining. It is then placed in a slightly slanting position in the sun to dry. When dry the sheet of paper is separated from the calico with a wooden paper-knife. In ordinary sunny weather the same tray can be used twice in the day.

"In the rains but little paper is manufactured, owing to the difficulty of drying it. The number of trays the worker has determines to a great extent the amount of paper turned out. A family with twenty-five trays, working regularly and keeping always a sufficient quantity of the bark boiling, can turn out fifty sheets in the day. The work is not laborious, and a large proportion of the paper turned out is made by women and children. The sheets are made up into bundles of one hundred or one thousand and taken to the bazaar for sale. Traders come to buy from every trading State, and a good deal is taken to Mandalay by the Panthay caravans on their journey there from the trans-Salween States. The manufacturer sells at a price

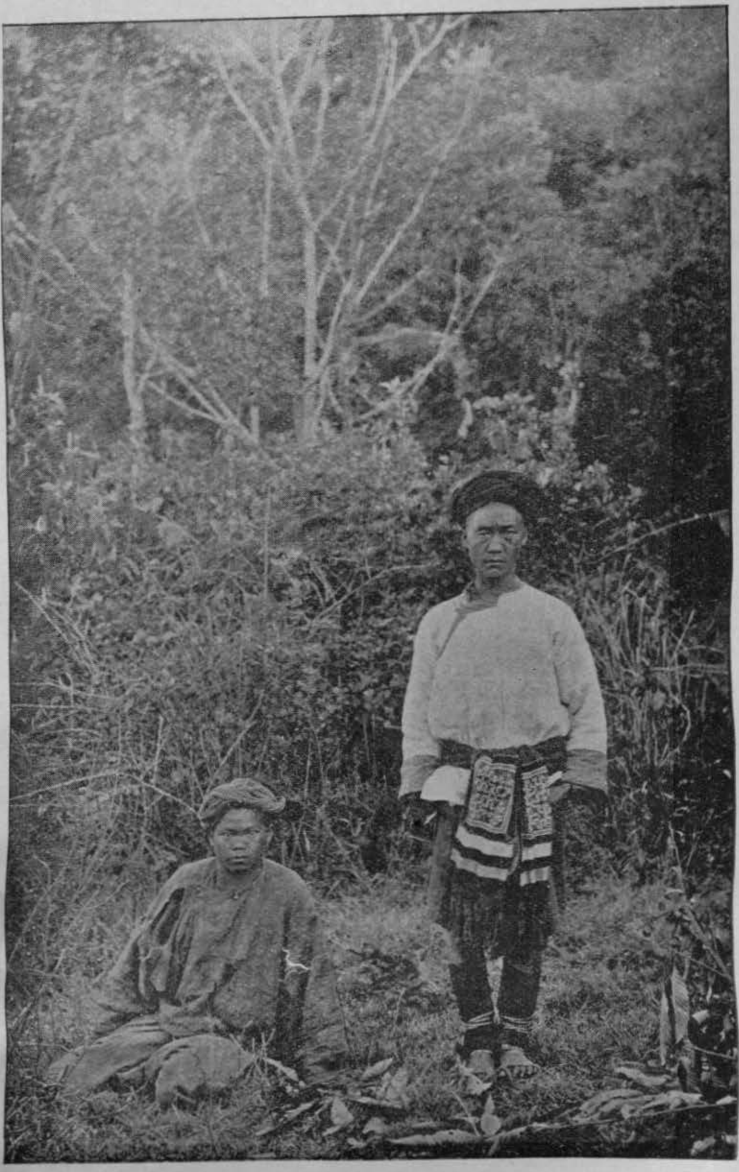


Photo-Block. Survey of India Offices, Calcutta, 1899.

MÊNG OR MIAOTZA MEN

CHAPTER XV.

REVENUE ADMINISTRATION, PAST AND PRESENT, POPULATION AND TRADE.

IN former times the whole area of Upper Burma was parcelled out in districts amongst various officers, who paid a fixed sum yearly towards the imperial revenue. The *Myoza*, the *eater* or governor of the district, having paid this into the treasury, took for himself whatever else he received by taxation or otherwise. The position of the head of a township was thus in direct antagonism to the interests of the people. He was responsible for the fixed yearly revenue; but as he received no salary, he was compelled to squeeze as much as he could out of the people for the support of himself and his followers. Many of the remoter provinces were not taxed in any systematic way, and at the beginning of this century even so comparatively accessible a place as Shwebo paid twenty-five viss of silver, *kunbo* as an annual quittance.

Complaints were made by the people of the hardships and extortions they suffered under, to Mindôn Min, and partly to relieve them, and still more because he saw that it would be to his own advantage, he put an end to the old system, decreed that all officials should be paid by salaries which he fixed, and at the same time instituted the *thathameda* or tithe tax. The principle was no doubt derived from the *Dhammathat*, in the preface to which we are told that King Thammada, the first king, received one-tenth of the produce of all cultivated land as his revenue. The derivation of the word is uncertain. It seems probable that there is a reference to the name of the king, but other derivations have been suggested: first, the Sanskrit *dasan* (for *thatha*), meaning ten, and *medka* (*madhu*), money; and, secondly, *thatha=kauk-bin*, produce, and *meda*, one-tenth. The *thathameda* was in theory a tax on incomes derived from all sources, including agriculture, trade, handicrafts, and even menial labour.

The accounts as to the first collection are conflicting. Some Burmese say that the first *thathameda* assessment was made at the rate of one-tenth of the gross outturn of crops calculated by the number of baskets. It was first paid in grain, and only considerably later in money. Great delay and inconvenience was caused

by the cultivators not being allowed to reap their crops until after the fields had been inspected, and so finally in 1226 B.E. (1864) the tax was changed to a sum of ten rupees per house. Others, however, say that the tax was introduced by King Mindôn in 1219 B.E. (1857) in place of a tax called *kunbodaw* (value of betel for royalty) instituted in the time of Bodaw Paya. At first *thathameda* was demanded at the rate of one rupee per house. In the second year it was raised to three rupees, and in the year after that in some districts to five, in others to three rupees ten annas. In 1228 B.E. (1866), after the rebellion of the Padein Prince, the rate was raised all over the country, in some villages to eight rupees, in others to ten, and even, in the case of rich villages or in neighbourhoods which had joined in the rebellion, to twelve rupees. The extreme seems to have been in Meiktila, where as much as fourteen rupees eight annas the household was for a time demanded. Finally, however, upon the representation of the monks and elders, it was settled at an all-round rate of ten rupees, but in some districts it was less.

For the purpose of assessing the *thathameda*, or income tax as it may very properly be called, each district and town was classified according to its situation and other circumstances affecting its general wealth and prosperity. According to this classification was fixed the rate. In fertile tracts or places otherwise prosperous, within easy reach of river communications, the highest rate prevailed, and in proportion as a district enjoyed these and the like advantages in a less degree, the rate was lighter. It was never fixed for more than one year at a time. Various accidents, such as drought, or fires in a town or village, and any other circumstances that affected the ability of the people to pay, were taken into consideration in the assessment. Where there had been serious calamity, such as an epidemic among the plough cattle, whole districts and towns were sometimes exempted. Such grounds of exemption were reported regularly to the capital through the *Awewun* to an *Atwinwun*, who might be compared with the Financial Commissioner, and had under him a *thandawsin* for each district. Methods varied, but in every case the procedure adopted was the same. Instructions were in the first place issued by His Majesty in Council to the officers who were responsible for the collections, the *myozas, windawhmus, myowuns, myintat bos*. They in their turn passed on the instructions to the *myothugyis, daing-thugyis*, and the various local officers. These then submitted the *thathameda*-rolls, which technically were checked by the *myowuns, myingaungs*, and other superior resident officers, and then forwarded to the revenue officer in Mandalay. He examined and checked them in a variety

of ways and by means of an extraordinary variety of officials, the *tayā-saye*, the *byè-taik*, the *thansin*, the *athôn-saye*, the *saye-daw-gaung*, or the *anaung saye*. The process was invested with every semblance of political freedom. When it was concluded, an order was issued, through the same channels by which the assessment-rolls had been submitted, to the thugyis to collect the tax as passed.

It may be said that as a general thing the basis of calculation was one hundred rupees from every ten houses, with a ten *per cent.* general deduction for *dôkkhita* and others exempted, those physically incapacitated for work, those who by any accident or disaster were destitute of means to pay, the aged and widows, monks, soldiers, sailors, and generally all Government servants. The total amount payable by the village being thus determined, the village itself settled the quota to be paid by each individual householder. This was done by *thamadis*, assessors, usually appointed by the villagers themselves. These were naturally the recognized elders of the village, who were acquainted with all local details. They seem to have carried on this form of local self-government reasonably well. Discussions took place and objections were heard, and disputes were settled by the collector or his assistant. If the *thamadi* took the oath and stated that his assessment was fair, it was never interfered with. The principle was that each man paid according to his means, and that the vestry-men, or churchwardens, so to speak, in each parish, apportioned the tax. A common method was the following. The produce of each man's land was first assessed; generally at the rate of Rs. 4 per 100 baskets of paddy, Rs. 2 per 100 viss of millet, and so on. The total amount derived from the land was deducted from the amount demanded from the village. The balance was then shared among the householders as follows: each male over twenty counted as one *mu* (one-eighth of a rupee); each female over twenty as half a *mu*; each pair of bullocks as one *mu*. Those under twenty, cows, and old bullocks did not count. Thus the total number of *mus* for the whole village was obtained. The amount remaining to be paid by the village, after deducting the land assessment, when divided by the total number of *mus* in the village, gave the value of one *mu*. Thus the number of *mus* in a household gave the amount to be paid by the household, and the amount assessed on account of the produce of the land worked by the household, added to the above, gave the full amount of the tax to be paid. For example: in a village of twenty houses the *thathameda* demand is two hundred rupees. The amount assessed on the produce of the land is, say, eighty rupees, so that one hundred and twenty rupees has to be furnished by twenty house-

holds. Household *A* has one man, one *mu*; one woman, half a *mu*, and one pair bullocks, one *mu*: a total of two and a half *mus*. Say the total number of *mus* in the village amounts to sixty. Then the value of one *mu* is two rupees. Thus household *A* would pay five rupees, besides whatever his land had been assessed for.

When their assessment was finished, actual collections by the thugyis and *ywagaungs* began, usually in April or May. At first the thugyis were paid by the assignment to them of *thugyi-sa* lands as an appanage of their office, but latterly they deducted their *kaingtwet*, a commission of ten, and in some places twelve, *per cent*. They then made over the money to the *myothugyi* or other Township Officer, who drew up an abstract of receipts and transmitted the whole collection to the royal treasury through the *Kayaing-wun*. Sometimes it was this officer who deducted the amount due for the salaries of the different officers, including himself, and forwarded the balance to the *Akundaw* office, where it had to be passed by the Revenue *Atwinwun*, but whichever method was adopted, it is believed that the passing of the money through so many hands resulted in the disappearance of about a third of what had been actually collected. Each village was made responsible for runaways and other defaulters and for persons dying. The punishment for non-payment was incarceration in the stocks, spread-eagling in the sun, the squeezing of the legs between tourniquetted bamboos, and similar penalties.

The system of *thathameda* was adopted by the British Government very much as we found it, but greater accuracy in counting the households and better supervision produced almost immediate startling differences in the sums realized. For example, in Pindalè in Burmese times Rs. 4,100 are said to have been paid into the *Akundawye Htana*. Under British supervision the amount taken in 1891 was Rs. 43,350.

The principle on which the assessment of the tax is based is sound, and it is well suited to the Burmese character; indeed the people evolved it themselves, but "experience has shown that, though "in theory the *thathameda* is a graded tax on incomes, in prac-"tice its incidence is unfair and its growth is only in a remote "degree dependent on the measure of increase in the resources of "the people. Each bread-winning family in a village is a ten-"rupee unit for purposes of *thathameda* taxation. No matter "whether one hundred families in village *A* cultivate only three "hundred acres and reap fifteen thousand baskets of paddy, while "one hundred families in village *B* cultivate two thousand acres "and reap one hundred thousand baskets of paddy, the tax imposed

"on village *A* and on village *B* is the same—one thousand rupees. "The result is that, other things being equal, the families in village "*B* pay nearly seven times less in proportion to their means than "the families in village *A*. Again, to continue the illustration, if next "year the families of village *B* bring under the plough old aban-"doned holdings and thereby increase their cultivation to three "thousand acres, they still only pay one thousand rupees *thatha-"meda*." One great objection to the tax, as Mr. Smeaton, from whom the above is quoted, points out, is the fact that no man knows from year to year what he will have to pay. In a small village especially the deaths, departure or failure of one or two residents, or the addition of a few poor families, may make a material difference to the individual assessments.

"The *thathameda* is thus, so far as the large majority of the "people—the agriculturists—are concerned, inequitable in its inci-"dence, inelastic in the highest degree, and unfair to the State. Its "radical defect of principle is that it takes strict account of the num-"bers and subdivisions of the people without sufficient regard to "their varying resources. It expands with the growth of the "population and their subdivision into families, but it bears no "true relation either to the gross increase or the distribution of "agricultural wealth. The consequence is that the poor, so long as "their poverty is not so abject as to entitle them to exemption, "pay relatively far more than the rich.

"The *thamadis* generally begin by fixing the demands on traders "and handicraftsmen and then distribute the balance over the "cultivators and labourers. They consider that traders and arti-"zans are fit subjects for careful and adequate assessment. Hav-"ing disposed of them, they do not trouble themselves much to "ascertain the relative annual profits of the different agricultural "holdings, and they assess the holders indiscriminately, and in "most cases inadequately. Ordinarily the only exception is "when an enterprising cultivator of a large farm has made himself "conspicuous by holding up his crop for a good market and lending "money to a neighbour on mortgage of his land. The *thamadis* "then single him out for special treatment and assess him as "highly as they can according to their lights. But even in this case "it is not the size of his holding and its outturn which attracts the "notice of the assessors, but rather his successful disposal of the "produce, and the enhanced demand they make on him is really "due to his being considered a trader."

These considerations show the disadvantages of the *thathameda* tax, but no direct tax such as an income tax or capitation tax can

ever be absolutely just in its incidence. Under an income tax some escape with a very light assessment; others are heavily taxed. Under the capitation tax current in Lower Burma a wealthy trader or broker in a village, who earns perhaps Rs. 5,000 a year, may be paying five rupees, and his neighbour, a married cooly earning barely one hundred rupees in the year, also pays five rupees. By the method of the settlement now in progress in Upper Burma and described later, the incidence will be adjusted. Eventually all people who live on the income of their land alone will be exempted from *thathameda*, and pay land revenue. Those who hold no land will continue to pay *thathameda*, and those who hold land, but derive one-half or more of their total income from sources independent of the land, will also pay *thathameda* according to fixed rates in addition to the land revenue.

For a time the abolition of *thathameda* and the substitution of a capitation tax was contemplated, owing to the very great difficulty of devising a workable scheme of *thathameda* adjustment, but eventually the extremely equitable character of the tax prevailed, and the objections to it will be got over by establishing a sliding scale of rates. Gradually district rates, which need not be inalterable, will be fixed, and District Officers will fix the local incidence within their charges. The *thamadis* will be informed of the rate and resulting demand for their village and circle and will be left to distribute the demand as they think fit. They may be trusted to make the fairest distribution that can be made, and they can do it infinitely better than Government can do it for them.

The *thathameda* was the chief source of revenue in native times, as it is now. All the lists of the demand due from each tract were destroyed on the capture of Mandalay. The *Hlutdaw* furnished statements of the gross demand from each *Kayaing-wun's* charge, showing a grand total of thirty-one lakhs. This was probably an under-estimate, for it was known that a few years before the annexation the yield of the *thathameda* tax to the treasury was forty lakhs, while in 1884-85 the collections were thirty-six lakhs.

Besides the *thathameda* tax, the principal sources of revenue under the Burmese Government were (1) rent of royal lands or *lèdaw*: monopolies: tribute from the Shan States: irrigation tax: forest tax: earth-oil tax: besides a variety of miscellaneous dues on fisheries, ferries, customs, religious fairs, bazaars and many others.

The tables below give these as far as it was possible to ascertain them in the absence of proper statistical returns.

The *thathameda* of ten rupees per house came to the following amounts according to the assessments of 1869 and 1884-85:—

Place.	Amount in 1869.	Number of houses in 1884-85.	Houses assessed.	Amount demanded.
	Rs.			Rs.
The suburbs of Mandalay ...	90,874	18,428	12,050	1,20,500
Amarapura	22,807	...	...	...
Paleik	2,156			
Tabatswe	2,754	29,327	23,181	2,31,810
Kyauksè	1,38,864			
Ava	60,000	10,964	9,125	90,250
Shwe-pyi yan-aung	1,68,880	16,433	13,105	1,31,050
Talôk-myo (Myingyan) ...	88,184	10,498	8,475	84,750
Pindalè	66,784			
Taungtha	9,600	8,951	8,725	87,250
Nyaungôk	6,440			
Taungngu	72,000	21,800	19,965	1,99,650
Yamèthin	1,28,000			
Meiktila	33,601	9,520	4,920	49,200
Yindaw	10,354			
Nyaungyan	21,464	11,527	4,993	49,930
Myohlaing				
Myotha	5,928	...	...	...
Aung-gin	2,264	...	...	...
Paukmyaing	2,600	...	...	...
Teikhtihlaing	6,192	...	...	...
Pin	27,640	...	...	...
Natmauk	9,488	...	...	...
Kyaukpadaung with Pyinmana ...	37,456	12,141	9,000	54,000
Gôn nga-ywa	504	...	...	...
Yanaung	11,360	...	...	...
Tayanga	1,320	...	...	...
Gyanmin	1,024	...	...	...
Auk-gin nga-kôn asu	9,700	...	...	...
Hlaingdet	8,104	...	...	...
Hkinle-ywa	1,200	...	...	...
Thagaya	2,096	...	...	...
Taungdwingyi	1,14,552	21,293	20,000	2,00,000
Pahkangyi	1,65,660	27,819	21,250	2,12,500
Pagan	87,152	13,864	11,703	1,05,327
Sale	33,771			
Pahkanngè	11,920			
Kyaukyè	4,720	11,375	12,061	1,20,610
Yenangyaung	11,544			
Wetmasut	3,312			
Sagu	31,665	10,149	7,776	77,760
Lè-gaing	22,091			
Magwe	55,480	10,314	9,724	97,240
Myingôn	12,842			
Malun	22,022			
Thayet	2,060			
Taung-gwin	5,536	5,156	4,161	41,610
Patanago	3,664			
Myedè	36,694	6,530	5,677	56,770
Mindôn	20	4,584	4,198	41,980
Taungsin	...			
Sinbu	...	25,384	21,523	2,15,230
Kyinbin	...			

Place.	Amount in 1869.	Number of houses in 1884-85.	Houses assessed.	Amount demanded.
	Rs.			Rs.
Salin	97,375	...	...	...
Kyabin	17,116	...	...	...
Taungpalusôn kye-ywa ...	7,320	...	...	...
Minbu	6,408	...	...	...
Mye-san shweto-ywa	8,472	...	...	...
Nyaung-u kan	5,348	...	...	...
Myi-pyan hintha	6,672	...	...	...
Pyi-lun kyaw	2,896	...	...	...
Sinbyugyun	16,520	...	...	...
Myesundaw	1,232	...	...	...
Auk-myat sinkyun-su ...	21,700	...	...	...
Kyamyin inginbinhla ...	1,200	...	...	...
Auk-min kyo-kya	1,410	...	...	...
Yaw	28,360	13,505	10,911	1,09,110
Saw	2,720			
Laungshe	13,144			
Htilin	4,312			
Pègyi	...	9,101	5,624	33,744
Bigyitaik	79,172	...	...	...
Kanni	45,136	5,946	3,445	27,560
Pandaing	19,768	...	...	...
Ngaplè	4,760	...	...	...
Taingda	5,985	...	...	...
Myothit	7,872	...	...	...
Myindat	360	...	...	...
Yawhkun nga-ywa	18,750	...	...	...
Sagaing	61,117	11,846	9,578	95,780
Alôn	1,62,156	20,288	12,676	76,056
Amyin	50,700	6,065	5,621	44,968
Chaung-u				
Alakappa...	...	4,038	3,420	27,360
Shweyinma	4,952	...	...	...
Tabayin	76,496	13,669	11,675	70,050
Yatanathinga shwebo ...	1,20,728	22,861	19,411	1,16,466
Ngayanè	7,720			
Kawthani				
Htantabin	6,556	2,665	2,577	15,462
Ngagatsin	...			
Pintha	...			
Ywatha	...			
Hngetpyaw	...			
Nyaungbin	...			
Taikkyansa	9,608	...	...	...
Zinnawwunkyan	624	...	...	...
Thapôtdaw	8,085	...	...	...
Kyaukmyaung	5,358	...	...	...
Thitsingyi	1,896	...	...	...
Ngepatchaung	1,312	...	...	...
Sheinpaga	4,014	...	...	...
Myedu	32,944	8,014	6,390	44,730
Wuntho	50,000	5,793	1,630	9,780
Shwe ashegyaung	20,358	1,950	1,307	9,149

Place.	Amount in 1869.	Number of houses in 1884-85.	Houses assessed.	Amount demanded.
	Rs.			Rs.
Kawlin	15,560	1,487	1,213	8,491
Eingdauktha	5,704	1,490	545	3,815
Thisse	1,504	...	...	...
Shweginsa	6,120	...	...	...
Pyansala	34,560	...	...	...
Kyiwun-wuntha alègyaung ...	8,000	...	...	...
Wuttuhkayan	4,000	...	...	...
Mogôk-kyatpyin	20,408	...	...	...
Mattaya	32,000	...	...	...
Kutywa	6,768	...	...	...
Taungbyôngyi	7,296	...	...	...
Momeik Mohlaing	20,000	600	...	...
Singu	40,000	6,423	3,950	31,600
Sabènago	2,104	581	565	4,520
Moda	9,187			
Yinhke	2,096	2,059	2,010	6,030
Mawlu	8,531			
Hkaungtôn	1,625	...	...	...
Manlè	19,961	1,412	1,049	3,147
Shwegu	11,875			
Mohnyin	8,250	4,263	...	...
Kaungtôn	3,120			
Bhamo	22,454			
Mogaung	12,952	2,188	...	...
Myadaung	22,387			
Kyanhnyat	4,625			
Hingamo	812			
Tagaung	3,932	4,068	3,795	18,975
Kyundaung	5,687			
Katha	7,174			
Thinkadaw	2,400	...	...	...
Mingin	23,200	5,797	2,840	28,400
Taungdwingyaung	11,600			
Tammu, Hkanpat	24,000	5,431	5,254	31,524
Kale	12,000	2,342	2,031	10,155
Maingkaing	1,040	696	...	...
Masin	14,528	...	...	...
Teinanyin	13,600	...	...	...
Kyè-wun wun-su chin-dwingyaung	8,000	...	...	...
Hkanti Zingaling	8,000	...	...	...
Maingnyaung	3,920	...	...	...
Lehka yankinsa	8,000	...	...	...
Myatsingôn	3,200	...	...	...
Sanda	2,768	...	...	...
Thanyat	1,976	...	...	...
Hsumhsai	28,336	...	...	...
Hsipaw	56,000	...	...	...
Möng Löng	18,216	...	...	...

It will be seen from these lists that King Thibaw had lost hold of very many of the more outlying places and of the feudatories.

The names of the royal gardens were—

မဟာဟေမာဇလဥယာဉ်တော်	... Maha Hemazala Uyin-daw.
မဟာအသောကဥယာဉ်တော်	... Maha Athawka Uyin-daw.
အဥ္ဇနကေသီဥယာဉ်တော်	... Inzanakethi Uyin-daw.
သီရိထုမနဥယာဉ်တော်	... Thiri Thumana Uyin-daw.
မဟာသီရိဗုံဝရဥယာဉ်တော်	... Maha Thiri Bônwara Uyin-daw.
မဟာသီရိမလ္လိကဥယာဉ်တော်	... Maha Thiri Mallika Uyin-daw.
မဟာသိဒ္ဓိဗလဥယာဉ်တော်	... Maha Theiddi Bala Uyin-daw.
မဟာဇေယျဝတဥယာဉ်တော်	... Maha Zeyawata Uyin-daw.
မဟာသီရိမန္တာဝရဥယာဉ်တော်	... Maha Thiri Mantawara Uyin-daw.
မင်္ဂလာဥယာဉ်တော်	... Mingala Uyin-daw.
မဟာသီရိမေဃာဝန်ဥယာဉ်တော်	... Maha Thiri Meghawun Uyin-daw.
သီရိမနော်ရမာဥယာဉ်တော်	... Thiri Manawyama Uyin-daw.
မဟာပဒုမဥယာဉ်တော်	... Maha Paduma Uyin-daw.
မဟာမေဃာနာဥယာဉ်တော်	... Maha Meghana Uyin-daw.
သီရိမဟိသာဥယာဉ်တော်	... Thiri Mahitha Uyin-daw.
မဟာမုဒ္ဒိကဥယာဉ်တော်	... Maha Mōddhega Uyin-daw.
မဟာဒေဝတာဥယာဉ်တော်	... Maha Dewata Uyin-daw.
မဟာသီတလဥယာဉ်တော်	... Maha Thitala Uyin-daw.
မဟာသီရိစိတြဝန်ဥယာဉ်တော်	... Maha Thiri Seiktarawun Uyin-daw.
သီရိမဟာမုနောရမ္မိဥယာဉ်တော်	... Thiri Maha Munawyammi Uyin-daw.
မဟာသီရိနန္ဒဥယာဉ်တော်	... Maha Thiri Nanda Uyin-daw.
ဟေမာဇေယျာဥယာဉ်တော်	... Hemazeya Uyin-daw.
နတ်ရှင်ဩဇာဥယာဉ်တော်	... Nat-shin Awza Uyin-daw.
သောကဥယာဉ်တော်	... Thawka Uyin-daw.

Other sources of revenue were—

Forest duties.

	Rs.
Ava and Sagaing forests	36,500
Other connected duties	13,500
Taungngu forests	1,80,000
Taungdwingyi forests	8,500
Mindôn forests	10,500
Chindwin and Mu forests	1,00,000
Mōng Nai forests	10,000
Mōng Pan forests	10,000
Kēng Tawng forests	30,000
Masa Shweli forests	2,00,000
Thayaungchaung forests	1,750
Hlaingdet forests	10,000
Other small forest duties...	10,000
Total ...	6,20,750

Customs and other duties.

	Rs.
Mandalay customs	5,00,000
Mandalay export duty	2,40,000
Duty on *ngapi*	1,65,000
Duty on earth-oil	6,00,000

	Rs.
Taungngu customs duties	60,000
Letpet duty	7,20,000
Mandalay, Amarapura, Ava and Sagaing oil-duty ...	40,000
British Burma oil duty	10,000
Mogaung jade duty	5,800
Myedè customs duty	24,000
Cocoanut and plantain duty	7,608
Duty on articles of Burmese dress	5,000
Chindwin customs duty	34,000
Duty on pedlar goods to the Shan States (*pakôndan*) ...	1,25,400
Möng Nai, Möng Pan, Mawkmai customs duty ...	4,600
Mandalay, Amarapura, Ava and Sagaing carts duty ...	58,000
Taung-in *ngapi* duty	2,000
Mint duty	6,000
Mandalay Shore duty	2,400
Mandalay, Amarapura, Ava and Sagaing tobacco and sugar duty	14,400
Tobacco and sugar duty in lower districts	10,000
Mandalay, Amarapura, Ava and Sagaing jade duty ...	14,400
Duty on rubies	98,400
Mogaung rubber duty	40,000
Chindwin rubber duty	5,000
Up-country fisheries and other duties	20,685
Taungdwingyi carts duty	25,000
Bhamo customs duty	13,000
Hpa-in Sadôktaya steatite pencil duty	3,000
Total ...	28,53,693

Bazaar, Ferries and Guard (or Toll-booth) duties.

	Rs.
Mandalay Zegyo duty	68,400
Mandalay, Amarapura, Ava and Sagaing bazaar duty ...	39,420
Kyauksè bazaar and ferry duty	12,000
Singu bazaar and ferry duty	200
Möng Mit and Möng Hlaing bazaar duty	4,000
Mandalay, Amarapura, Ava and Sagaing ferry duty ...	45,500
Kodaung, Letpanyin, Tawbuhlakôn ferry duty ...	12,000
Downward ferry duty	2,400
Amyin ferry duty	2,400
Mu ferry duty	1,000
Sale ferry duty	200
Pagan ferry duty	1,000
Hsumhsai—twelve guards duty	40,000
Sabenago toll duty	23,000
Mingôn toll duty	9,240
Kyauktalôn toll duty	7,600
Mainglôn toll duty	1,200
Mu and Tôktalôk toll duty	2,500
Taungbyunnga toll duty	2,400
Total ...	2,74,460

Forests	6,20,750
Customs	28,53,693
Bazaars, &c....	2,74,460
GRAND TOTAL ...	37,48,903

Pagodas at which annual feasts were held, and the amount derived from the lease of the market booths (wuttakan mye-hkun).

The following nine pagodas in "the twenty-four *htana*" were the most sacred :—

Pagoda.	Situated at	Month of festival.	Amount paid by lessor.
			Rs.
Thihadaw	On the island of that name in the Irrawaddy.	*Tagu* (March-April)	380
Shwe Indein Hpawng-daw-u...	At Indeinggôn on the Yawng Hwe lake.	*Tabaung* (February-March).	585
Shwe Yin Hmyaw ...	In the Shwe Pyi Yanaung east of Meiktila.	*Tabaung* ...	810
Shwe Maiè	Ngasingu ...	Do. ...	540
Shwe Sigôn	Panya ...	Do. ...	450
Tankyi	Pagan ...	Do. ...	720
Shwe Zayan	Tamôkso ...	Do. ...	300
Shwe Tha-lyaung ...	Kyauksè ...	Do. ...	780
Yazamuni Sula (Kaunghmudaw).	Sagaing ...	Do. ..	600
		Total ...	5,165

The Maha-muni Hpaya (the Arakan Pagoda) collections were leased for Rs. 2,760.

Other more local feasts were held at the following pagodas :—

Pagoda.	Place.	Date.	Rent.
			Rs.
Sibu Shin	Pahkangyi ...	*Taga* (March-April)	95
Second festival ...	Do. ...	*Kasôn* (April-May)	91
Kyetmauk	Do. ...	Do. ...	40
Hpyadi ...	Do. ...	Do. ...	27
Myaing	Do. ...	......	40
Myitgaing	Do. ...	*Nayôn* (May-June)	40
Kyauktaung	Do. ...	*Waso* (June-July) ...	16
Thabye-ywa	Do. ...	Do. ...	34
Sinsein (a spirit feast is held at the same time).	Do. ...	......	14
Ma-u	Do. ...	......	20
Mawkkalan	Do. ...	......	20
Second festival ...	Do. ...	*Tasaungmôn* (October-November).	20
Shinbin Dammatha ...	Sagaing ...	*Wagaung* (August-September).	40
Ngatatgyi	Do. ...	*Thadingyut* (October-November).	40
Ngasun	Ava ...	*Tawthalin* (September-October).	36

Pagoda.	Place.	Date.	Rent.
			Rs.
Myethna festival, at the same pagoda.	Ava ...	*Wagaung* (August-September).	16
Shwekugyi	Thitseingyi ...	*Tawthalin* (September-October).	32
Shwetaung-u	Sheinmaga ...	*Wagaung* (August-September).	36
Sutaungpyi	Ngasingu ...	*Tawthalin* (September-October).	25
Shwemutaw	Do. ...	......	19
Thissa-ya	Do. ...	......	10
Mwesandaw	Do. ...	......	9
Shweku-gale	Tabayin ...	*Thadingyut* (October-November).	8
Shwemutaw	Do. ...	......	8
Shwetaw-kyaung	Do. ...	*Tasaungmôn* (October-November).	32
But-ywa	Do. ...	......	36
Mayagan	Do. ...	*Tagu* (March-April)	72
U-hnaw	Bangyitaik ...	*Tabodwè* (January-February).	120
Nyaunggôn	Do. ...	*Tagu* (March-April)	115
Myigyi	Do. ...	*Tabaung* (February-March).	100
Kyatet	Do. ...	*Tagu* (March-April)	32
Tayagyi	Do. ...	......	8
Lè-ngauk	Do. ..	*Kasôn* (April-May)	60
Let-taung	Do. ...	......	32
Palè	Do. ...	......	12
Tein-nè (a spirit feast is held in the same month).	Do. ...	......	60
Bowintaung (a spirit feast also held).	Do. ...	*Tasaungmôn* (October-November).	72
Shwe Nyaungdaw ...	Do. ...	*Tabodwè* (January-February).	72
Lawkamayazein ...	Taungngu ...	......	200
Shwe Myintin	do. ...	*Tabaung* (February-March).	150
Shwe Kintha	do. ...	......	50
Thahkodaung	do. ...	*Tabodwè* (January-February).	50
Chaungtè sedawya ...	Sinbyugyun ...	*Tabaung* (February-March).	40
Shwe Minwun	Paukmyaing ...	*Tasaungmôn* (October-November).	90
Myashwegu	Kyaukpadaung ...	......	138
Pwinlan	Pagan ...	*Kasôn* (April-May)	16
Theingoshin	do. ...	*Nayôn* (May-June)	80
Gawdhamma	do. ...	*Waso* (June-July) ..	24
Alodawpaw	do. ...	*Kasôn* (April-May)	16
Kugyi	do. ...	*Tabodwè* (January-February).	16
Letpya	do. ...	......	24
Nanda-u	do. ...	*Pyatho* (December-January).	92

Pagoda.	Place.	Date.	Rent.
			Rs.
Yenyasan	Pagan ...	*Tagu* (March-April)	16
Shwesawlu	Myinmu ...	*Wagaung* (July-August).	120
Shwe Paunglaung ...	Amyin ...	......	80
Shwe Pawgyun	Myaung ...	*Tawthalin* (September-October).	80
Lemyethna	Sale	*Waso* (June-July) ...	20
Sedigyi	do. ...	*Tasaungmôn* (October-November).	56
Shwe Paunglaung ...	Yaw	*Tabaung* (February-March).	100
Sutaungpyi	do. ...	*Pyatho* (December-January).	50
Shwe Thandaung ...	Indeinggôn ...	*Tabodwè* (January-February).	200
Mansetdaw	Sagu ...	*Tabaung* (February-March).	1,700
Shwe Yinsaing	Shwe pyiyanaung ...	*Tasaungmôn* (October-November).	40
Shwe Kugyi	do. ...	*Natdaw* (November-December)	30
Shwe Kyena	Bhamo ...	*Tabaung* (February-March).	320
Shwe Pawgyun	do. ...	......	200
Sutaungpyi	Pindalè ...	*Nayôn* (May-June)	150
Kyaukka	Alôn ...	*Kasôn* (April-May)	100
Yelègyun	do. ...	......	72
Ngwechaung	do. ...	*Nayôn* (May-June)	100
Bawga	do. ...	......	100
Pyizinkan	do. ...	......	50
Kanbya	do. ...	*Waso* (June-July) ...	85
Ye-yo	do. ...	......	50
Kyetsugôn	do. ...	......	5
Wan-o	do. ...	*Thadingyut* (September-October).	10
Mônywa	do. ...	......	150
Le-si	do. ...	*Tasaungmôn* (October-November).	40
Sin-ye	do. ...	......	100
Wet-ye	do. ...	......	15
Kawkkathan	do. ...	......	30
Pôntu	do. ...	*Natdaw* (November-December).	100
Nyaunggan	do. ...	*Pyatho* (December-January).	25
Maungtaung	do. ...	*Tabodwè* (January-February).	25
Thazi	do. ..	*Tagu* (March-April)	150
Letaungpyin	do. ...	......	20
Ingyindaw	Yatanathinga ...	*Tabaung* (February-March).	260
Maha Wezaya Yanthi ...	Kohkayaing ...	......	800
		Total ...	7,994

The ninety-eight pagoda festivals realized in all, it is stated, Rs. 15,889. These figures are not borne out, however, by the details.

Land tenures.

Theoretically the State was the primary and ultimate owner of all land, but in practice land was either royal (*ayadaw* or *lèdaw*), private property (*boba-baing*), or waste (*myelat* or *taw*). Waste land was no man's land; anybody could squat on it and obtain ownership thereby.

Burma has nowhere any village communities as the expression is understood in India and as the principle which maintains, so far as can be seen, among most of the hill tribes of the Shan States. No Burman village held rights of any kind as against the State.

Royal land became so—

(1) by *ameindaw*, or order declaring any waste land to be reserved for the king;

(2) by forfeiture of private lands for offences against the laws;

(3) by simple confiscation or seizure at the king's will of private lands;

(4) by the king inheriting all lands left ownerless by failure of heirs, as ultimate heir, called *zôn-pyet*, *amwe-pyet*.

Wuttakan land may be considered a special class of State land. It was land assigned to a pagoda or monastery by gift, whether of the king or of a private individual. *Wuttakan* lands were not gifts in perpetuity, but were very seldom withdrawn, usually only in the case of a gift to a particular monk. A list of all the *wut-takan* lands in the country was inscribed on marble slabs in the garth or close of the Mahamuni Arakan pagoda in Mandalay.

Private land was acquired—

(1) by clearing waste land—*dhamma-ugya*. "By the custom of the country waste land is no man's land, in which whosoever wills may go and clear a piece, and merely by doing so make it his own."

There is, however, another spelling and etymology for this kind of land. It is traced back to the first man who cut down the trees and bushes with his *dha-ma*. The expression *dhamma-ugya* thus means "where the chopper first falls." Such land includes both land on which the ancestors of the present owner settled in times too remote for record, as opposed to land acquired more recently by sale or mortgage, and also recently cleared land, which is essentially State land, and was given by the village headman to the applicant.

Custom varied as to the length of tenure which gave complete rights. It may be said broadly that cultivation by a man and his descendants for three or four generations secured rights of transfer and inheritance. The land then became *bobabaing*.

(2) by inheritance;
(3) by gift of royal land from the king;
(4) by transfer of any kind.

The privileges of the owner of private land were—*first*, he could alienate his land by sale or mortgage; *second*, on his death it passed to his heirs; *third*, he was not liable to eviction.

Dhamma-ugya or *bobabaing* land which had been acquired by purchase or mortgage was called *danekitta*.

The *ahmudan*, the soldiery, held royal lands on a service tenure, *ahmudan-sa* for infantry, *si-sa* for cavalry, according to the terms set forth in patents or *sittan*. Alienation of such service land was strictly forbidden, but no attention whatever was ordinarily paid to the prohibition. At the time of the annexation very little service land was in the possession of its original holders.

There was no land tax, only rent on royal lands. The usual rate was one-quarter of the outturn, sometimes one-third, but one-fifth and even two-elevenths were in some places taken. Farmers of the revenue made as much more as they could get out of the cultivators. Hereditary tenant right in tenants of royal land was recognized.

The rank of the officers of the *ahmudan* was graded on the ascending scale: thus an *akyat* was in command of ten men; a *thin-thenat-ôk* or *thwethaukgyi* commanded five *akyats* or fifty men; a *tat-hmu* commanded one hundred men; a *bo* commanded any number of *tat-hmu*. The corresponding ranks in the cavalry were *myinthugyi*, *myingaung*, *myinsaye*, *myintatbo*, and *myinmu*.

The revenue from royal lands was collected by an officer called the *lèdaw ôk* appointed by the *Hlut-daw*. He was subordinate to the *kayaing wun* and *myowuns* and took his orders from them. The title was changed to that of *lèsaye* when the king demanded irrigation tax. The *lè-saye* or *lè-ôk*, the thugyi and the *ywalugyis* made assessment-rolls showing the lands cultivated, how much proved profitable, and what the probable amount of outturn would be, and these statements were submitted to the *wun*, who checked them. The statement thus passed was forwarded by the *kayaing wun* to the *lè-yôn* in Mandalay, and this department conveyed the orders of the king as to the disposal of the revenue. Sometimes it was sent up in coin, sometimes in kind; occasionally

orders were received to give the rice to the *pôngyis*. The tax on the *thein-su*, *ayadaw*, and other crown lands came into operation only from the year 1228 B.E. (1867), after the *Myingôn* rebellion. All the islands in the Irrawaddy were considered royal lands.

In 1885-86 the whole of the *lèdaw*, with the *uyin-daw* (tax on royal gardens), and the *kyun-kôndaw* (tax on islands), were farmed out by the Burmese Government to a contractor for ten lakhs.

The amount levied varied very greatly even in the same district, the chief tracts being Kyauksè, Mandalay, and the Salin tract. From twenty-five to fifty baskets the *pè* was perhaps the general range. From *lamaing* lands, worked by the king's cultivators, the rate of taxation was about twenty baskets the *pè*.

A similar course was usually adopted with regard to the assessment of the irrigation tax, though in this case the *lè-saye* usually accepted the statements of the thugyis as to the lands irrigated and checked them without further reference to the *kayaing wun*. In districts like Meiktila a great festival was held annually when the water was let out, and all landholders had to pay four annas for the amount of land capable of being ploughed by two buffaloes (*kywè-shin*), which was usually estimated at ten fields. Later, however, this was raised first to one and then to two baskets of paddy for this area, and then in a more systematic way for each *pè*. An official called *kan-daing* or *kan-ôk* was in charge of the irrigation system, and under him was a *hmyaung-gaung* or *hmyaung gyi*, who looked after the channels. These men made out the irrigation tax rolls and distributed the water. They also collected the tax. The *kan-ôk* got a monthly salary of fifty rupees from Government, but his subordinates drew no pay or commission. The landholders, however, had to make it worth the *hmyaung-gaung's* while before he would let them have any water. Most of the irrigation works went to ruin in King Thibaw's time.

The theory held by the Burmese Government was that all alluvial land, *kaing* and *kyun*, in the riverain tracts, was State property. But it would seem that very often the theory did not obtain in practice, and in many places riverain lands undoubtedly became private property. Connected with it was the practice of *ngôklaik* (literally, following a stump). If *bobabaing* land was scoured away by the river, the limits of erosion were marked by posts (*ngôk*). If subsequently soil was thrown up again, the proprietor could claim his old boundaries. Beyond these new accretions became *min-mye* or *thugyi-cha mye*, State property.

In country such as that on the banks of the Môn river three levels were recognized,—the *kôn*, or mainland, which is never

flooded, but is liable to erosion; the *myelat* or *kôntasin*, the middle level, old alluvial formation, now only occasionally flooded; and the *kyin* or *aukkyin* of recent alluvial formation, with the generation, which is annually flooded and liable to constant change. The former two classes may be either State or private land; the last is *prima facie* State.

The *wunsa* or *minmye* lands paid no revenue, but the *thugyi-sa* attached to the office of the village headman in very many places had to pay a tax of three rupees the *pè*.

Daing-paw lands was the name given to holdings deserted by their owners in time of famine: 1810 is remembered in the Dry Zone as the great famine year. These were assumed as State property, and the allotment of them was left to the thugyis. An ordinary rate for such lands was four hundred baskets of paddy in the year.

The thugyis in the remoter districts, nominally and sometimes practically, owned all the land in the circle and could seize a holding without assigning any reason and distribute it at will. In the more accessible places all land measurements were made by the *myedaing wundauks*, when lands were leased or given as a free gift, but elsewhere the estimates rested with the thugyi.

Lamaing lands near the capital were ordinary *ahmudan* lands, but in the remoter provinces their origin has frequently been lost. Various legends are told. For example, in the Minbin district, the story is that "long ago in the time of King Bodaw, a body of "landed proprietors, labouring under the despotic exactions of the "*wun* of Salin, went to Amarapura to appeal to the king, and "offered a share of the produce of their fields, amounting to 3,600 "baskets of paddy, as an annual payment, if he would exempt them "from the irrigation tax, from furnishing labour for irrigation, reli-"gious and other works, and from generally rendering personal ser-"vice to officials." This prayer was granted, and 3,600 baskets of paddy were annually collected and forwarded to the capital, where they were credited to the Chief Queen. These landed proprietors were also exempted from *thathameda* after its introduction until King Thibaw's time, when they were assessed. The only privilege retained after this was exemption from water-rate. The owners of these Minbu lands were known as *shwe-nan-yo lamaing* and were looked on as under special service to the Chief Queen, though no definite service appears ever to have been rendered.

All *wuttakan* lands were exempted from paying revenue, where they were cultivated by the villagers to whom they had originally been granted in consideration of service in looking after the particular pagoda. When, however, the fields were worked by others a tax

at the rate of five rupees the *pè* was collected. It is quite impossible to say what proportion of the collections was really spent on the repairs or decoration of the pagodas. It is clear from most of the *Yazawins* that the *Wut-mye Wun* in Mandalay spent a great deal of the money in entirely secular entertainments. It is also definitely stated that much was expended on the reception and entertainment of foreign ambassadors. The tithes were collected on the spot by the head of the pagodas slaves' village, in many places called the *zayat-yit*, who deducted the usual percentage. A good deal seems to have been locally spent on *pwès*. The rest was sent to the *Wut-mye Wun*. What he returned for the use of the pagodas does not appear anywhere. It would almost appear as if he only sent it when there was a pious king who looked after such matters, or when there was notorious need of repairs or restoration.

The taxes on fisheries, ferries, forests, and monopolies were known in Burmese times as *asut* and *akyauk*. The last-named consisted chiefly of cart tax, boat tax, and brokers' or commission agency tax. The fisheries on the Irrawaddy were claimed and worked as *bobabaing*, or private property belonging to the families of the original fishermen, until the time of King Mindôn. Mintayagyi, however, issued a rescript declaring the fisheries to be crown property. They were leased by the *Wun* to the highest bidder, or to personal favourites, by whom they were usually sublet. The amount derived from them was not great.

The ferries were disposed of in the same way. The forest tax was fixed at the rate of one rupee each *dha*. Among the monopolies, cart tax was fixed at two annas for every cart used for purposes of trade. The boat tax varied from one rupee to four annas the boat, according to the articles traded in. The brokerage farmer received three per cent. of the value of all goods brought or sold. The sole right of selling certain commodities, such as *letpet*, *ngapi*, and salt, was sold in Mandalay. Bazaar collectors were usually directly appointed, and paid a fixed sum to the *Wun*. Any surplus over this he was allowed to keep for himself, but no allowance was made for deficiencies. Two annas a stall was taken from sellers of silk, one anna per yoke-load from those who sold grain or other produce. Food stalls and sellers of *ngapi* paid six pies. These were country rates, and they varied considerably in different places.

The Royal Gardens never paid taxes to the Revenue office in Mandalay. The gardens were usually assigned to favourite Queens and Princesses for their use for life. The gardeners were all appointed by the king and were invested with the powers of a thugyi. They looked after the gardens as well as the village, when one was attached to the garden, and periodically presented the

Royal Lady, to whom it was granted, with a portion of the produce. The office of gardener was hereditary. They were called *uyin-ôks* or *uyin-hmus* and appointed their own subordinate *a-hwuns* or *daings*.

The collection of dues at fairs was latterly farmed out by the Mandalay Revenue office to contractors, who undertook to pay a fixed sum for the license to take the fees. Besides paying his fixed rent, the licensee had to bear all the expenses of the fair, such as building stalls, holding *pwès*, and entertaining the officials who attended the fair. The receipts from the fairs were often given to the monks by King Mindôn.

All land in Upper Burma is now either State or private. The right of acquiring ownership by squatting (*dhamma-ugya*) is at an end. All waste land is State land. Service lands have become State or private according to decision in each case. The idea of adopting a system of rent-free and partly free, and quit-rent service lands was abandoned, though the *ahmudans*, being hereditary holders, were deserving of consideration. The *wuns* and other officials naturally took nothing, for they were, for the most part, non-hereditary stipendaries, while the farmers of State lands were simply speculators. *Wuttakan* lands under British rule remain such, except where they would in any case have lapsed to the State. In the Administration Report for the year 1892-93 the Upper Burma land tenures are described as follows :—

" The primary division of all lands in Upper Burma is into—

(*a*) State land.

(*b*) Non-State land.

State land is described in section 23 of the Upper Burma Land and Revenue Regulation, 1889. It includes the following :—

" (*a*) Land hitherto termed Royal land, *i.e.*, lands customarily known as *lèdaw*, *ayadaw*, *lamaing-mye* (land cultivated by Royal slaves) and other lands similarly styled up to the coming in force (13th July 1889) of the Land and Revenue Regulation.

" (*b*) Land held on condition of rendering public service, or as an appanage to, or emolument of, a public office, that is to say, land held at the time of the coming in force of the Regulation by persons who actually or nominally rendered or were liable to render service to the King, and to whom the land had been assigned as remuneration for such actual or nominal service. This category includes land held under a

variety of tenures, of which the following are the principal:—

"*Ahmudan-sa* land, of which the produce is enjoyed by persons who had been foot-soldiers or artillerymen of the King or by the descendants of such persons; by pages of the King or their descendants; by the King's boatmen, letter-carriers, betel-carriers, and other menials, or their descendants, and so forth.

"*Sisa* land, of which the produce is enjoyed by horse-soldiers of the King, or their descendants.

"*Thugyi-sa* land, of which the produce is enjoyed by thugyis (revenue collectors), or their descendants.

"*Wun-sa* land, of which the produce is enjoyed by persons who had been *Wuns* (District Governors) in the king's time, or by their descendants.

"*Min-mye* land, assigned for life, or for lives, or for a period to members of the Royal Family.

"(*c*) Islands and alluvial formations in rivers, *i.e.*, lands liable to periodical change by the action of the river. [*Chaungdein* lands, which are permanent alluvial formations submerged to a greater or less extent when the river is in flood, but not shifting in form and character with the current, are not State lands, except on the Irrawaddy and the Chindwin, where all such lands were Royal.]

"(*d*) Waste land and land included within reserved or village forests, by which is meant all land which had never up to the time of the coming in force of the Regulation, *i.e.*, up to the 13th July 1889, been under cultivation, except—

"(i) sites and enclosures of pagodas, monasteries, other religious buildings and schools;

"(ii) sites and enclosures of dwelling-houses in towns and villages.

"(*e*) Land which had been under cultivation, but had been abandoned, and to the ownership of which no claim was preferred within two years from the coming in force of the Regulation.

"In the case of land coming under heads (*a*), (*b*), and (*c*) the British Government has simply assumed the rights enjoyed by the Burmese kings. In the case of land coming under heads (*d*) and

(*e*) it has done more than this. The kings of Burma laid no restrictions on the cultivation of waste land: any person was at liberty to till waste land, and on bringing it under cultivation he became its owner. The British Government has, under the Regulation of 1889, declared itself the owner of all waste land, and no such land may be cultivated except in accordance with the rules under the Regulation. These rules provide for the grant of leases of waste land for any period not exceeding thirty years, and for the grant of permits to occupy such land temporarily. Cultivators wishing to take up waste land are at liberty to adopt either of these methods of acquisition. The rules, which are modelled on the rules in force in Lower Burma, provide for the levy of revenue on areas leased and occupied, and for the temporary exemption from revenue of areas which have to be cleared of forest growth, shrubs, or grass before they can yield a crop.

"Non-State land is land which does not fall within the preceding category of State land and includes—

"(*a*) lands held in private ownership, of which the principal descriptions are,—

"(i) *Dhamma-ugya* land, *i.e.*, lands which were cleared by persons before the 13th July 1889 and are still in the possession of these persons;

(ii) *Bobabaing* lands, *i.e.*, lands which were cleared before the Regulation came into force, and are now in the possession of the descendants of the persons who cleared them, or of persons who obtained them for valuable consideration from those who cleared them, or from their descendants;

"(iii) lands of which the ownership had been granted by written orders of the king, or has been granted since annexation under a written instrument by, or by order of, the Local Government: such lands would be considered to be *bobabaing*;

"(iv) *Wuttakan* lands, or lands devoted to the upkeep of a pagoda, monastery, or other religious institution.

"Tenants in Upper Burma fall into two classes: (i) tenants of the State; (ii) tenants of private individuals. Tenants of the State are persons who occupy State land. The incidents of their tenure, their rights and privileges are laid down in the rules under the Land and Revenue Regulation. Under the Burmese Government the rent of State lands was fixed by custom and was ordinarily one-fourth of the gross produce. The tenant was liable to eviction at

any moment. In some parts of the country evictions were common ; in other parts tenants were rarely disturbed and had a practical fixity of tenure. The rules under the Regulation provide for the fixing of rents on a consideration of the value of produce and of the amount of the customary rent, and also for the ejectment of tenants after notice and payment of compensation for improvements, or, if notice is not given, on payment of compensation, both for disturbance and for improvements. Tenants of private individuals are in the same position as tenants in Lower Burma.

"The position of tenants in Lower Burma may be summed up in the statement that there is no fixity of tenure and no legal limit to rents, but that the condition of tenants is on the whole prosperous. If a tenant is rack-rented, he can get other land to cultivate on easier terms by moving elsewhere.

"There is no special law on the subject of town lands in Upper Burma. Land is held partly under grants or leases, made in accordance with rules promulgated from time to time, and partly by squatters."

The description given above do not exhaust the category of Service lands, and moreover there are varieties of State land which have been declared to be private property. Thus there were *athi* or *asu* lands, village communal lands, on which no villager appears to have been able to acquire exclusive proprietary right. They were at the disposal of the thugyi, as trustee both for the Government and the villagers, and he distributed them periodically for cultivation. The tenure is somewhat obscure. It was not a common pasture and it does not seem altogether to have been the same as the Early English folcland, but, like it, the *athi* had a tendency to become *terra regis*, and so it has been determined to be in most cases in Upper Burma. The difficulty of decision is lightened in many cases by the rule that, wherever it is possible, every village has its own pasture and fuel reserve. *Ayadaw-mye*, State land proper; *min-mye*, royal or State land, not service land or the personal property of the king ; *asoya-mye*, Government land ; *ywa-mye*, land cultivated by the villagers of a certain village ; *thugyi-cha-mye*, lands to which the headman appointed tenants, are all practically synonymous terms and were very loosely used in different districts. The lands were all State lands left to the thugyis for distribution among their own villagers, and therefore neither heritable nor transferable.

But in any case the king was the supreme land-owner, *yemye-shin*, whether it was held in free socage, villein socage, in commendation, by Knight service, Grand Serjeanty, Petit Serjeanty (cases like which occur in the Shan States), or frankalmoign. Thus lands

abandoned, *daing-baw*, escheated to the crown, and so did lands on failure of heirs, *sônthe amwe pyat*. Lands which were forfeited for high treason were called *thein-zu*. The occasion was sometimes rather trivial. Thus in Kyauksè one Maung Shwe O had his land confiscated in 1879 for abetting a conspiracy to get the *daingwun's* daughter married to King Thibaw. *Akyodaw* lands were private lands which the owners surrendered to the headmen when they could not pay the local irrigation tax. They could resume the lands on payment of the arrears. The various kinds of service lands were very numerous. Technically they were all taken away in 1234 B. E. (1873), and the *ahmudans* were paid fixed salaries of ten rupees a month, but practically they remained either in the hands of the original *ahmudan's* representatives, or of the first occupant, *lôkyinswè*, who took possession. Thus *thugyi-sa-mye* survived until the times of the British Government, notwithstanding an order by King Mindôn refusing possession of such lands to thugyis who received commission. Similarly the *thugyi-cha-mye* could legally neither be sold nor mortgaged. Yet both transactions were quite common and were recognized in common speech as *thugyi-paung-mye* or *thugyi-yaung-mye*.

One particular kind of *ahmudan-sa*, the *ne-mye* (literally, dwelling land), has been declared in certain places to be *bobabaing*, or non-State property. These *ne-mye* were lands given to *ahmudans*, royal servants, or soldiers, as sites for residences, and were originally State lands. Instead of using them as dwelling-land, the *ahmudans* turned them into fruit gardens and usurped the right to transfer them by sale and mortgage. The enquiry into their status elicited much general information as to service lands which is here condensed from the report of Mr. Laurie, Settlement Officer, Regular deeds of grant, *kyolan sittans*, existed formerly in the Burmese *shwetaik*, giving lists of regiments and of sites allotted to them. Of these only copies now exist. The oldest of these is the *Thuyè-sittan*, a list of regiments or companies existing in the time of Nyaungyan Mintayagyi in 961 B.E. (1600). It is evident from this *kyolan* that the regiments were not composed either exclusively or for the most part of Burmans. There were Shans from Chiengmai (Zimmè) who formed the Yunzutta. Other Shans formed the Yunzu Kaung-han tat. The Shweban, Shweda, Win-thuyè, and Tat-thuyè consisted of friendly Talaings. The Myin, Ywelulin, and Mogyoda companies were Burmans. The original list does not appear to have had any pretentions to completeness, and the copy was probably the work of some recent compiler attached to the Burmese Records, or Survey Department. In this document a grant of land is made "for cultivation and residence" in favour of certain

Talaings. No distinction is made between *lôk-mye* (land to be cultivated) and *ne-mye* (land to be lived on). The Shweban company of Talaings received 49 *pè* as *lôk-mye* and two and a half *pè* as *ne-mye*. The Talaing *tat-thuyè* and five other regiments received land, but no distinction is drawn between *lôk-mye* (also called *sa-mye* or land to be eaten, subsistence land) and *ne-mye*.

The Thatettaw Kyolan dates from 1163B.E. (1802), two centuries later. The area allotted to each man is the same as that specified in the *kyolan* of 961 B.E., five *pès* for each *ngè-tha* or private, seven and a quarter *pès* for each *ayat* or *gaung*, and ten *pès* to each *thwethauk-gyi* or *tat-hmu*. This land was granted as *lôk-mye*, but the site was selected because it adjoined sixty-nine *pès* three *seiks* of "land which the former kings granted them as *ne-mye*." No allotment of dwelling land was therefore necessary. In this deed of grant it is mentioned that a certain area of three hundred *pès* had been taken back from the original grantees and given to the *htônasu-tha*, the lime-burners. Apparently, therefore, the Thayettaw *ahmudans*, though they had lost their *sa-mye*, had kept their *ne-mye*. This would have only been just if the *ne-mye* were actual house-sites, but it also might indicate that a freehold title by prescription had been acquired, though no house existed. The Taung-gaing *kyolan* of the same year provides in a similar way and on the same scale for six *thwethaukgyis*, fourteen *akyats*, and one-hundred and twenty privates.

The Kinmungyôn *kyolan* of 1841 is interesting as showing that artizans also received *ne-mye*. In this deed of grant, eight *angyein-pattawgyet*, men who streched skins on drum-heads, received land for dwelling-sites.

The general conclusion was that *ne-mye* were granted as perquisites of office to be surrendered on leaving public service. They were lands intended for quarters and barracks and therefore there was no contemplation of the possibility of the payment of taxes. But instead of living on them the *ahmudans* dug them up, sunk wells, planted areca-palms and betel pepper vines, and made valuable property of them. The laxity and carelessness of the Burman official character not only prevented interference, but actually led to acquiescence in the conversion. The lands came to be assessed as garden land, and were then assessed on the same terms as and by analogy with the ordinary village gardens with which they were mixed up. Thus they came to be freely sold and mortgaged just as if they were private property. The basis of title was simply prescriptive right acquired by long possession and by custom, just as excluded private lands, or *kwetchè dhamma-ugya*

lands transferred by the original squatters, were admitted to be *bobabaing*. Government therefore declared that wherever the Burmese Court could be proved to have acquiesced in the assumption of a private title, *ne-myes* should be considered *bobabaing* or non-State property.

On a similar principle, when tenures in Mandalay Town were recorded, all house-sites granted before the founding of Mandalay were entered as non-State. When Amarapura was the capital, no particular sites were allotted for the residence of *ahmudans*. They were scattered all over the country, and the large numbers located in the capital were mixed up with non-officials. From this it was deduced that before the founding of Mandalay there were no restrictions regarding the alienation of house-sites occupied by *ahmudans*.

The want of a statute *Quia emptores* was also apparent in the case of the cavalry service lands. In the Meiktila district a tract of *si-sa* land was assigned for the support of the Eastern Battalion of the Shwepyi Yanaung horse. This area was divided into four *kaungs*—Ingan, Taungbo, Kôndaung and Sameikshe,—each of which was under a *myingaung*. Each *kaung* was again subdivided into two *sis*, each under a *myinsi*, and each *si* was again divided into *daings* or circles. Each of these divisions had to pay a certain sum towards the support of the troopers serving in Mandalay. The holders, however, were allowed to sell and mortgage the lands The king required one hundred cavalry soldiers from each *kaung*, and he held the thugyis responsible for providing them. He did not care whether the horsemen were supported by their lands or by contributions. In the enquiry into the status of the *si-sa* land, decisions of the *Hlut-daw* recognizing the *bobabaing* (non-State) character of the *sisa* lands were produced, and in all such cases the lands were admitted to be private property. The laxity of the Burmese Government and its want of grasp over the country is conspicuous in such matters, and the status of service lands thus has almost everywhere to be decided on the merits of each case.

Until the passing of the Regulation referred to above there was similarly much confusion as to *dhamma-ugya* land. The absolute right to the land cleared did not theoretically rest in the occupier until ten years after the land had been cleared, but the right of the crown to lands of this kind appears never to have been asserted before the expiry of ten years unless the land was abandoned, and practically the occupier had a full title to the land from the time he cleared it. If the original occupier abandoned the land after

holding it for ten years, he had the right to claim it within ten years from the State or a subsequent occupier. If the land had not been claimed by the State or occupied by any person, the original occupier could re-occupy the land, though more than ten years had elapsed since he first abandoned it. If he abandoned it before ten years, he had no further right to the land. When the *dhamma-ugya* land passed to the son of the first occupier it was known as *boba dhamma-ugya*; when it passed to the next generation it became *bobabaing*, land held by the father and grandfather. At what precise period it became negotiable and transferable the Burmese Government seem to have been too listless and indifferent to determine. No one seems to have known definitely what land was truly *bobabaing* except the actual collectors of revenue. There were no records either in the *Hlut-daw* or in the owner's hands of such tenure. It appears, however, certain that in the third or fourth generation *dhamma-ugya* was always recognized as *bobabaing*.

A still more notable instance of the carelessness or indifference of the Burmese Government was in the case of *wuttakan* lands, lands held in frankalmoign; permanently alienated by the Burmese kings for the purpose of keeping pagodas and sacred edifices in repair. A number of persons were made slaves of the pagoda, themselves and their descendants, for all time to come. They were given a certain area of land for their support, and in return they were expected to make annual repairs to the particular pagoda in their charge. But these people gradually mortgaged to outsiders the land granted to them, without any apparent interference on the part either of the Government or of the pious. Indeed, it seems clear that in some places Government itself laid hands on these ecclesiastical lands without regard either for the pious founder or fear of the fate of the Jackdaw of Rheims. In this way a large proportion of the *wuttakan* land of Upper Burma became alienated without any chance of its ever being redeemed. The following account of the *wuttakan* land dedicated in mortmain to the use of the Shwethalyaung pagoda at Kyauksè is engraved on a stone seal in the precincts of the pagoda:—

"May the religion of Him whose teachings are excellent beyond precious gems, who possesses incomparable and omniscient wisdom, to whom reverence is due from the three ranks of mankind; may His religion last for five thousand years!

"In reverence for Him who is the lord, the righteous, the all-wise, these glebe lands are devoted by King Anawra-hta-zaw to the service of the Shwetha-lyaung Pagoda as is hereinafter written—

"Seventy *pès* to the south of Pyeban village, including Tangôn village, with the following boundaries: south, Tanaungbingôn village and a stone pillar; east, the river; west, the rocks.

"Eighty *pès* to the north of the paved court (*thamandalin*) of the pagoda, where the tanks and the like places for religious purposes are to be dug. The boundaries are: east, the Thindwè and Ngalônban canals; south, the hill; west, the Minye canal; north, the Min-mwe hill, the Nwagu, Ingyi and Letlègyi canals.

"Three hundred *pès* to the south of the *thamandalin.* The boundaries are: east, the river; south, Letpanzin Dôndan; west, a stone-pillar; north, the Kunzè canal.

"One hundred and eighty-seven *pès* known by the name of Myityo Myedaw.

"King Minyè Kyawza, the son of Ngazu Dayaka, who rules in Ava, devotes glebe lands to the pagoda—

"In Twinthin circle, Laungdawya *kwin*, one hundred and thirty *pès*; bounded on the east by the Sidaing canal and the Sagashwe monastery; on the north the Thinbungyo.

"In Twinthin circle, seventy *pès* and the village of Letthaza Kayuthi; bounded on the north by the land of Pagan Min; on the east by the Ngakayaing stream; on the south by the Yitma canal; on the west by the Kudan canal.

"These lands, together with the one hundred and twenty-five descendants of the eleven original *payakyuns* (pagoda slaves), are re-dedicated to the same pagoda on the 9th *lasan* of *Thadingyut* 1145 (10th October 1783) by King Shinbyushin of Amarapura. These one hundred and twenty-five persons are to eat the produce of the land and to take care of the pagoda. [Here follow the names of the pagoda slaves.]

"He who takes away any of these *wuttakan* lands shall suffer the torments of hell for five thousand years, nor shall he be redeemed by the *dewas*, though they are in number as the sands of the ocean. From son to grandson all efforts to attain a higher existence after re-birth shall fail. He and they shall be surrounded by the ninety-six diseases, the thirty-two kinds of bad destiny, the twenty-five kinds of dangers, and the sixteen kinds of injury."

Again in 1164 B.E. (1802), the year of the second Sittan or Doomsday Book, Bodaw Paya caused an enquiry to be made, and the statement of Maung Tha, the head *payakyun*, is inscribed upon the stone. It is to the effect that the pagoda was built by Dhammathawka and repaired by Anawra-hta; that at the time of this inscription the pagoda slaves were all descendants of the

original eleven, and that no revenue was ever levied on the land given to them, nor had any *ahmudan* authority over them; nevertheless the land had dwindled away, while the pagoda slaves had increased in numbers, and much of the land had been taken and made *ahmudan-sa*. Of one hundred and twenty-five *payakuns* only thirty remained, and out of twelve hundred and thirty-six *pès* originally given to the pagoda only ninety-four remained. Therefore King Naungdawgyi (the son of Alaung Paya, who succeeded to the throne in 1760) had ordered that revenue was to be levied on the *wuttakan* land by the headman and that he should receive one-tenth as a commission. The amount collected was to be kept separate and was to be expended on the pagoda.

This order was confirmed in the reign of Mindôn Min in 1224 B. E. (1862), on an application of the *Thathanabaing* stating that revenue was being levied by the *sè-gyis* (the men in charge of the weirs) upon the land.

At the time when we took over the country only 180·4 acres of this *wuttakan* land existed—about one-tenth of the original grant. It paid a revenue of eight baskets a *pè* to a committee of elders, who were the trustees of the pagoda and were responsible that the moneys collected should be spent upon the pagoda.

The *wuttakan* lands which should belong to the Shwemale pagoda at Kyauktaingdwin in the Mandalay district are marked out by twelve stone pillars which still exist. They were set up in 252 B.E. (890 A.D) by King Yamaing Sithu, who assigned pagoda slaves and laid a curse on whatever persons diverted the lands from their pious purpose. Yet nearly the whole of the land is now unblushingly spoken of as *ayadaw wuttakan* and *bobabaing wuttakan* (contradictions of terms which are particularly blasphemous from the point of view of the devout), and the pagoda derives no benefit from them.

The pagoda is so small, so plain, and so neglected, that it would seem that for the thousand years of its existence nothing had been done except to keep it from falling. The *ayadaw wuttakan* is said to have come into existence thus. Two *payakyuns* quarrelled over their land and killed one another. The Magwe *mingyi* held the land *pendente lite* and instituted an enquiry into the murders that had occurred. But there were no murderers left and the case remained adjourned *sine die*. The land remained as a deposit and became the property of the State. It ought to be haunted by evil spirits, as many farms all over the country are believed to be, but it is not. As a matter of fact it seems certain that most of the revenues from these pagoda lands were utilized by the pagoda

slaves to free themselves and set up as traders in some remote places where their antecedents were not known. The position of pagoda slaves is hateful and despised among the Burmans, and the freeing of them might be considered a pious deed if it were done in an honest and open way. Of all the lands dedicated by King Yamaing Sithu there only remain one or two real glebe holdings cultivated by two or three *payakyun*. The slabs recording the *wuttakan* lands which stand in the Arakan pagoda curtilage in Mandalay are mere historical records of the triumph of human greed over pious intentions.

Here and there eccentric tenures have lasted till modern times. Such was the *taungzingôn-mye* in Minbu district. The traditional origin of this was that long ago there was a law suit in connection with these lands between the elder and the younger branch of the family. While the case was being heard, the younger branch, who were the defendants, went to the capital and offered the king 500 baskets of paddy yearly for ever if the case were decided in their favour. The defendants won their case and the 500 baskets of paddy were regularly paid. The elder branch had died out long before the British occupation, and of the five holdings which made up the original estate only one remained, but this continued to pay the 500 baskets of paddy.

The Burman is much attached to his land and will never sell it outright if he can possibly help it. Mortgaging, on the other hand, is extremely common, and some of the forms adopted appear to be invented rather to soothe the pride of the mortgagor than with any contemplation of the possibility of his ever recovering the land. Even what we should call an absolute transfer is gilded with the name of *paung-the*, a dead mortgage, though in a deed of mortgage no time for foreclosure is ever set forth. Contrary to our custom, the mortgagee almost invariably enters into possession as soon as the bond is made out, and the mortgagor does not remain a tenant at sufferance.

Custom seems to have varied very greatly, but in most cases the mortgagee was bound to agree to redemption at any period, after the lapse of three years, that the mortgagor wished, and seemingly not before. In fact there was almost invariably a clause inserted in every mortgage bond that the land should not be redeemed for three years *thônhnit, thônthi* (three years, three crops). Mortgages were practically always usufructuary. It is sometimes agreed by the parties that the redemption price shall be higher than the sum first received by the mortgagor. Another curious feature is the additional money which is paid, sometimes six months, or a year

or more, after the original mortgage is concluded, and without in any way prejudicing the equity of redemption. No interest is charged on the money loaned, and the mortgagor, or any descendant to the tenth generation, may redeem at any time he can. In no case does foreclosing—the fixing of a time beyond which the mortgagor may not redeem—seem to have been recognized. The advantage to the mortgagee is that he enters into possession of the land, and if the mortgagor owned plough-cattle, the mortgagee may use these to work the land, taking to himself three-quarters of the crop and giving the remainder to the mortgagor. In this there is a sort of resemblance to the form of pledge known to English law as a Welsh mortgage, though there is no suggestion of automatic redemption by process of time. The whole system was of the most easy-going kind, quite characteristic of the Burman. The method of recording title-deeds, with a soapstone pencil on the blackened surface of a *parabaik*, and this in a single copy only, retained by the mortgagee, is in keeping with the rest of the process.

The record is of the most perishable kind, in writing which is not more permanent than the mark of a slate pencil. Nothing exists beyond this except the *ex parte* statement of the contracting parties, which cannot be of much value regarding a transaction more than five or ten years old. Not only was the Burmese Government very careless and very rapacious itself, as well as indifferent to rapacity in its subordinates, but it was also very weak, and in King Thibaw's time was steadily losing grasp of all the country except in the immediate neighbourhood of the capital or of the Irrawaddy.

The village system in Burmese, as in India, had been the basis of the indigenous administration from time immemorial, but it had in many places lost its primitive form and was replaced by a somewhat complicated hierarchy of officials.

Under the king's rule any one who had money and could bribe the local officials or make interest at court could get what he wanted. There were in some parts of the country officials of various kinds and known by various names—*myothugyis* or officers of townships, *myingaungs* or cavalry officers, *thwethaukgyis*, who were supposed to have military duties in the line regiments, *pènin*, who should have been mere coxswains of royal boats. These officers, either having no duties in their proper spheres, or neglecting them or not having enough to do, but at the same time all of them inspired with the desire of making money, contrived to overshadow the village headmen. They usurped much, if not all, of the power and emoluments of the thugyis, and left to them only what was laborious or un-

pleasant in their duties. The anarchy and disorder which prevailed for a considerable time before the annexation led to the same result. Villages grouped themselves for protection under a thugyi or *myothugyi* who showed himself able to hold his own against the bands of robbers who preyed on the people. In return for the protection given, the emoluments of the immediate village headman passed away from him to the leading thugyi.

This not only rendered the task of suppressing disorder and establishing our authority more difficult, but it confused and rendered costly the collection of revenue. It was therefore determined in 1890 to re-establish the principle of recognizing the village as the administrative unit; what *myothugyis* existed were to be gradually got rid of and to be replaced by *ywathugyis*, who were to be headmen of a single village or of a group of contiguous villages so situated that the *ywathugyi* could personally and efficiently perform his duties; each *ywathugyi* was to be resident in his jurisdiction and the office was declared hereditary.

His duties now are, to collect the revenue and to discharge all revenue duties for the village in his charge, for which he receives a commission, to be determined from time to time by the Financial Commissioner. He is allowed to carry a silver-mounted *dha* and to have a red umbrella carried before him as insignia of his office.

This introduction of system is being followed up by regular survey and settlement. The system of survey in Upper Burma is practically the same as in the lower province. There is a connected theodolite extension survey and a field-to-field inferior survey. The only difference of importance between the two systems is that in Upper Burma the village takes the place of the *kwin* or block of cultivation, in Lower Burma. This division into artificial areas called *kwins* is foreign to the upper province, in which the unit of assessment is the collection of houses forming the village proper together with the lands belonging to the villagers and under the jurisdiction of the village headman.

Supplementary survey has been in progress in Lower Burma since 1879. The work in Upper Burma is more difficult and will occupy considerably longer.

The system of settlement differs considerably from that adopted in Lower Burma. In Lower Burma a single Settlement Officer deals finally with a comparatively small area, about six hundred square miles, in each year. In Upper Burma the Settlement Officer, aided by several assistants, deals at once with an area three or four times larger than that dealt with by a Lower Burma officer, but his operations within this tract are spread over three or more years.

During this time he and his assistants record tenures, test crops, and collect agricultural statistics over the whole area, fresh testings being made and fresh statistics being collected over the same area in each year.

At the end of the series of years the Settlement Officer proposes rates and makes his final report, which embodies the information collected during the period of inspection and the final conclusions drawn from it. The detailed procedure of the Settlement Officer also differs from that in force in Lower Burma. The work of settlement in Upper Burma is more difficult and more varied than in Lower Burma. In Lower Burma the Settlement Officer has practically only one agricultural season, one kind of crop, and one kind of tenure to deal with. His field operations are restricted to the dry weather. He has no direct concern with the non-cultivating classes of the people.

In Upper Burma there are at least three separate agricultural seasons, many varieties of field crops, and several descriptions of tenure. Field operations in most districts can be continued during the whole twelve months of the year, and finally one important part of the Settlement Officer's duty is to adjust the *thathameda* on the non-agricultural classes. The revenue law of Upper Burma provides for the levy of *thathameda* on all classes of the population, for the assessment of rent on State land, and for the assessment of revenue on non-State land, in place of the one assessment of acre rates in Lower Burma. Under the Burmese Government revenue was not assessed on non-State land. The present revenue law authorizes the levy of revenue on such land, but provides that when it is levied the owners of the land shall be exempted from or shall pay only a reduced *thathameda*.

The work of the Settlement Officer in Upper Burma thus divides itself into three distinct parts:—

(1) Record of rights and occupations of land.
(2) Assessment of rent or revenue on cultivated land, both State and non-State land.
(3) Adjustment of the *thathameda* on the non-agricultural classes and on the classes whose livelihood depends partly on agriculture, but largely on other sources.

The work under the first head consists in ascertaining and recording the exact area of land owned or occupied by each person, and the kind of tenure upon which he holds or occupies. These facts are recorded in registers and become the records-of-rights which have under the law to be maintained throughout Upper Burma. The second part of the Settlement Officer's duty, namely, the assessment

of rent and revenue, consists in the collection of information as to productiveness of the soil, values of produce, and cost of cultivation. From these data he deduces rates of assessment. The third part of his duty consists in the collection of information as to the occupations and means of livelihood of the people with a view to determining the amount of *thathameda* to be demanded from them after revenue has been imposed on non-State land.

The principles that have been laid down for his guidance are, that persons who, though partly depending on the land, derive a substantial part of their total income from sources independent of it, are to pay a reduced *thathameda*, and that persons who derive the whole of their income from sources independent of the land are to pay *thathameda* to the same extent as before settlement. Following these principles, the Settlement Officer, with the aid of the statistics which he has collected, draws up proposals for exempting one portion of the population from *thathameda* altogether, and for assessing the two remaining sections, those partially and those entirely independent of the land, to such *thathameda* assessments as they may properly be required to pay.

The rates fixed at settlement are of three kinds: rent-rates, which are assessed on State land; revenue-rates, which are assessed on non-State land; and *thathameda* rates, which are assessed on non-agricultural income. These various rates in each district are deduced by the Settlement Officer from the data collected during the three years that settlement is in progress, and are imposed under the orders of Government.

When Upper Burma was annexed very little could be learnt of the revenue payable. The *Hlut-daw* reported that all the Mandalay records had been destroyed. They furnished statements showing the gross demand for each *Kayaing Wun's* tract, which together made up a total of thirty-one lakhs. At the same time they said that some years before, the amount paid into the treasury was forty lakhs, and that in the year before annexation (1884-85) the collections were thirty-six lakhs. The tax on royal lands, at the rate of twenty-five per cent. on the gross produce, had been farmed for 1885-86 to a contractor for ten lakhs. This included the whole of the *lè-daw*, which lies mostly in the Mandalay, Kyauksè and Ava country, and in the Salin tract, with the *uyin-daw*, the tax on royal gardens, and the *kyunkôn-daw*, the tax on islands. The contractor, however, fled, and a good deal of the money was unpaid. The ruby mines were leased to local thugyis at a rental of two and a half lakhs. Jade receipts were leased for Rs. 60,000. Earth-oil brought in about three lakhs, or even less, far under the six lakhs of

Mindôn's time. The water-rate on irrigated lands was nominally all spent on the maintenance of the weirs and channels, but the state in which we found them showed that this was a delusion. The forests were mostly leased for terms of years to the Bombay-Burma Corporation, to the executors of Mr. Frank Walker, and to various Burmans of the lower province. Other sources of revenue, fisheries, ferries and bazaars, were insignificant in amount and were mostly included in the gross demand from the *Kayaing Wun*.

During 1886 naturally very little was collected, and the amount realized, principally from *thathameda* and land tax, amounted to barely four lakhs of rupees. In 1886-87 the amount collected from land revenue was a little over sixteen and a half lakhs, and from all sources twenty-two lakhs. In the following year the land revenue had risen to thirty-seven and a half lakhs, and the total from all sources to fifty lakhs.

Up till 1890 considerable portions of Upper Burma were still a good deal disturbed. The figures of the year 1890-91 therefore mark an epoch.

The following statement shows the revenue demand, remissions, and net demand of revenue for that year:—

Item of revenue.	Demand.	Remissions.	Net demand
	Rs.	Rs.	Rs.
Thathameda	46,18,522	71,488	45,47,034
State land	7,55,579	1,768	7,53,811
Excise	4,20,089	...	4,20,089
Forests	16,44,297	...	16,44,297
Stamps	2,31,109	...	2,31,109
Miscellaneous	11,42,726	4,166	11,38,560
Salt	14,480	2,360	12,120
Total ...	88,26,802	79,782	87,47,020

This marked an increase of 18·03 per cent. on the preceding year. The total sum collected, including arrears for collection, was 93·58 of the total amount. In the Administration Report for the

year it is noted: "In view of the fact that Upper Burma is a newly "settled country, the revenue was collected with commendable "punctuality. The increase in the amount of collections corre- "sponded to an increase in the number of households and was due, "partly to more careful collection, and partly to the return of peo- "ple to their old homes. The increase took place in every district "in Upper Burma except Pyinmana, and was most marked in Man- "dalay, Sagaing, the Chindwin districts, Myingyan, Minbu and "Magwe. In Magwe the increase was especially large, the number "of the householders assessed to *thathameda* having risen from "25,722 in 1889-90 to 37,969 in the year of report. The decrease "which took place in Pyinmana was due to the pacification of "Magwe, many families which fled to Pyinmana when Magwe was "disturbed having returned to their homes when quiet was restor- "ed."

There was a falling off in the revenue demand from State lands, which was due to protracted drought and consequent poor crops in the Mandalay division, but this was partly counteracted by the extension of the area of State lands in Katha, Sagaing, Yamèthin, and Kyauksè.

The only districts where salt-works of importance are carried on are Shwebo, Sagaing and the Lower Chindwin, and there was a considerable increase in the amount of the revenue.

The principal items of miscellaneous revenue in Upper Burma are the fishery revenue and the irrigation tax. The principal fishery districts are Mandalay, Katha, Sagaing, and Myingyan, but a certain amount is realized in other of the riverain districts. Most of the irrigation revenue came from the Kyauksè district, but the extension and repair of the old works in other districts promised a large increase.

Excise receipts formed an altogether new tax to Upper Burma. The Burmese kings forbade traffic in liquor, and though toddy, rice-beer and even spirits were manufactured, it was technically only for the consumption of foreigners, and no revenue was raised from it lest the king should seem to be encouraging evil. Traffic in opium was absolutely prohibited. For the use of Europeans, Indians, and Chinese, however, both drinking and smoking shops had to be licensed.

The decrease in the excise receipts at this time resulted from the substitution of the central distillery for the out-still system. Two distilleries were licensed, one in Mandalay, and the other at Pakôkku. Smuggling greatly affected the opium receipts.

During the next three years there was a steady increase, and the following statement shows the revenue in 1893-94:—

Item of revenue.	Demand.	Remissions.	Net demand.
	Rs.	Rs.	Rs.
Thathameda	54,88,167	20,224	54,67,943
State land	10,58,139	9,204	10,48,935
Excise	5,53,513	...	5,53,513
Forests	22,95,752	...	22,95,752
Stamps	2,99,668	...	2,99,668
Miscellaneous	8,17,108	1,568	8,15,540
Salt	10,397	...	10,397
Marine	5,212	...	5,212
Registration	4,954	...	4,954
Total ...	105,32,910	30,996	105,01,914

In the Administration Report for the year it is noted : "The "number of households assessed to *thathameda* in 1893-94 was "565,220 against 527,002 in 1892-93 and 507,912 in 1891-92. "The increase was due partly to increased efficiency in assessment, "partly to the return from Lower Burma of persons who had left "their homes during the scarcity of the previous years. The in-"crease in the yield of the *thathameda* was contributed by nearly "all the districts of Upper Burma, the principal increases in demand "taking place in Shwebo (Rs. 56,057), Lower Chindwin (Rs. "48,911), Pakôkku (Rs. 50,506), Kyauksè (Rs. 87,831), Meiktila "(Rs. 1,98,201), and Yamèthin (Rs. 1,02,583). A great part of "the increase was due to the return to normal rates of assessment "over almost the whole of Upper Burma. In 1891-92 and 1892-93 "the scarcity rendered considerable reductions in assessment neces-"sary in Shwebo and the Eastern division. In 1893-94 Shwebo "was the only district in which it was still necessary to retain an "assessment considerably below the normal rate of Rs. 10. In the "Eastern division the normal rate was almost universally imposed. "The large increase in Kyauksè was due to the raising of the rate "from Rs. 6 to Rs. 10. This enhancement followed on the abo-"lition of the system of forced labour on irrigation works which had "been inherited from the Burmese Government. Until 1893-94 the "people were required to do a certain amount of unpaid labour on "these wórks, receiving their remuneration in the form of reduction "of the rate of *thathameda* assessment to six rupees. This system "having been found to be unsatisfactory, it was abolished from the "beginning of 1893-94 and all labour on these works is now paid "for."

In Mandalay there was an increase in State land revenue attributed to exten on of cultivation and more accurate assessment by the thugyis. In Katha there was a nominal decrease. Before 1892 the whole of the Katha district, except that part which was formerly Wuntho State, was assumed to be State land. Enquiries made in 1892 disclosed the fact that part, at any rate, of the district is held under the *bobabaing* tenure. As enquiries are held into the tenures of land elsewhere there will probably be considerable changes in the State land revenue.

The irrigation works in Meiktila and Yamèthin led to a very considerable increase in the receipts for water-rate from these districts, and the returns from these districts and others where such works have been repaired or instituted for the first time must go on steadily increasing.

In 1896-97 the year was one of widespread agricultural disaster in Upper Burma. The Administration Report says: "Crops in all "districts were considerably below the average, and failed complete-"ly over extensive areas. In the Meiktila, Myingyan, and Yamèthin "districts famine relief works had to be undertaken. The gross "demand for *thathameda* fell from Rs. 54,74,933 to Rs. 43,22,986, "a decrease of over 21 per cent. from the demand for 1895-96, "while remissions increased from Rs. 1,42,079 to Rs. 1,54,607. "The State land revenue demand, however, rose from Rs. 11,05,856 "to Rs. 12,62,517. This increase was mainly due to the fact that "the island crops, which yield a considerable portion of the total "demand, were reaped in the early part of the year, and were not "affected by the drought that prevailed later. In the Mandalay "district rent on State land was collected for the first time, accord-"ing to rates fixed as the result of settlement operations. Water-"rate fell from Rs. 1,82,670 to Rs. 1,66,742 demanded, and from Rs. "1,56,018 to Rs. 1,23,508 collected. There was an increase in the "royalties and rents derived from Ruby Mines and petroleum "wells." The gross receipts in Upper Burma were Rs. 1,38,61,124 in 1895-96 and Rs. 1,31,26,451 in 1896-97. The increase since the annexation has been as steady as it has been great.

Population.

It is quite certain that in many districts of Upper Burma, and perhaps in the whole country, the population decreased steadily during the years which immediately preceded the annexation. Since the pacification many have returned to their old homes, and the opening of the railway has led to the settlement of great numbers of natives of India, Chinamen, and other foreigners. The fol-

PLATE XXXII.



Photogravure.

Survey of India Offices, Calcutta, September 1893.

KUN LÔNG FERRY IN 1891

lowing extracts from Mr. Eales' Report on the Census of 1891 give details as to the population and their occupations. There have been many changes since then, but the main facts remain the same:—

"The pastoral and agricultural class comprises 6,415 out of every 10,000 persons of both sexes. This class is divided into two orders—stock breeding and agriculture. The former order is comparatively unimportant. Live-stock in Burmese are restricted to draught cattle and draught buffaloes, a few ponies, goats, and pigs. Sheep, except in Government farms and in the hands of the importers, are unknown. It seems strange that in a country apparently so well fitted for the breeding of live-stock so little attention should be paid to their rearing. But Burmans are Buddhists, and, as such, are averse to the systematic slaughter of living animals for food. The hunter and fisherman are looked on as not being quite respectable. A Burman will eat his bullock if it dies a natural death, but it may be safely said that no Burmese Buddhist will admit that he breeds or fattens cattle for the slaughter-house. He will not sell his cattle to the Chulia or Chittagonian butcher. Comparatively few ponies are bred in Lower Burma, as until the annexation of Upper Burma, the export of stallions was forbidden. There were but 1,608 persons either engaged in or dependent on pony-breeding; of these but 716 were males over the age of fourteen. They are most numerous in Mandalay. Ruby Mines, Myingyan, Pakôkku, and Meiktila supply 882 persons, or more than half of those who live by this occupation.

"Of cattle-breeders and Commissariat farm hands there are but 12,442 persons; of these 5,854 were found in the districts of Akyab, Hanthawaddy, Pegu, Bassein, and Amherst.

"It would seem strange that whereas pony-breeding is commoner in Upper cattle-breeding should be more popular in Lower, Burma. That pony-breeding is more frequently found as an occupation in Upper Burma is due partly to political causes and partly because ponies breed better in the drier and more elevated parts of the province. We should expect that the same cause would lead to more cattle being bred in Upper Burma. It is probably true that agriculturists do breed more cattle in Upper than in Lower Burma, but there are few who devote themselves to cattle-breeding alone. Indeed, few Burmans can be said to breed cattle. They drive them out to their grazing-grounds and they are allowed to breed at their own free-will. In Lower Burma, however, there is in Akyab, Amherst, Hanthawaddy, Pegu, and Bassein, a large and fairly wealthy class of Indians who are by caste cattle-breeders and milkmen. Then again some Karens have taken to cattle-breeding. Of Burmans alone there are probably fewer cattle-breeders in Lower than in Upper Burma. Low as these figures are, yet they far exceed the return of cattle-breeding in 1881, when only 449—a manifest under-statement—were found in the lower province.

Herdsmen are entered in this order. Only 22,273 are returned as connected with this occupation; but as herdsmen are generally the servants, not of the breeders but of the cultivators, and as indeed there are few breeders who are not cultivators as well, the herdsman is generally only herdsman for part of the year and works as field-labourer or crop watcher,

and it is therefore probable that the return made is correct. Indeed, considering the fact that, as before stated, stock-farming is generally carried on as subservient and in addition to land cultivation, the inclusion of herdsmen in this order is in Burma open to objection.

"Buffalo-breeders and dealers include but 6,349 persons. The majority of them are found in Lower Burma. Buffalo-breeding is not an uncommon occupation amongst the Karens living in the jungle, and as there are but few Karens in Upper Burma, the number returned there under this heading is consequently very small, as the majority of Burman cultivators would no more think of returning themselves as buffalo-breeders—though most of their buffaloes are *chanbauk* or home-bred—than would the English farmer return himself as a poultry-breeder because of the poultry in his yard.

"Elephant catchers are but few. Ass and mule breeders are also very few. They are found chiefly in Bhamo and Ruby Mines districts and among the Panthay transport men.

"Sheep and goat breeders are classed together. Nearly all of them must be goat-breeders, as the only sheep bred in the country are bred by the Commissariat, or by natives of India entrusted with the sheep. There are also a few sheep-dealers in Rangoon, but most of the 1,303 persons entered under this heading are probably breeders and dealers in goats and not sheep. Pig-dealers are few because only Chinamen, Karens, and Chins breed pigs.

"The importance of agriculture may be gauged from the fact that 63·46 per cent. of the total population is either directly or indirectly engaged in, or dependant on, one of the twenty-two occupations contained under it. The next most important order is the preparation and supply of food, which comprises fishermen, butchers, grain-dealers, fruit and vegetable sellers, and a whole tribe of petty bazaar-sellers distributed amongst forty separate occupations. This order absorbs 9·93 per cent. only of the population. So far as can be ascertained from the return of 1881, about 56·68 per cent. of the males over fourteen years of age were engaged in agriculture. Taking the return for the whole of Burma, we find that out of 2,418,639 males over fourteen years of age, 1,434,017, or 59·29 per cent. were employed in agricultural pursuits. In the return of occupations irrespective of age, but distributed by districts, we find that, while ther eturn of the total province shows that this order absorbs 63·46 per cent. of the total population, in Lower Burma the percentage rises to 68·15, while in Upper Burma it sinks to 56·06, which is almost exactly the same as the return of Lower Burma in 1881. It is very certain that agriculture in Lower Burma with its broad paddy plains must absorb a larger proportion of the population, and it is probable that a large number of farm hands were in 1881 classed as coolies, of whom there were 87,675 and who were shown in the Indefinite class. It is possible, however, that the extension of cultivation and the decay of fisheries in more than one of the deltaic districts may account for the higher percentage of agricultural labourers shown in Lower Burma returns. It is at least quite clear that agriculture has lost none of its attractions, and still absorbs as much, if not more, of the total working population.

"ABSTRACT D.—*Showing the number of agriculturists per 10,000 of the total population of each district.*

District.	Agriculturists according to Census Commissioner's classification.	Agriculturists according to Financial Commissioner's classification.
Mandalay	2,395	2,417
Bhamo	5,749	5,750
Katha	5,995	5,992
Ruby Mines	3,324	3,329
Shwebo	5,750	5,760
Northern (Mandalay) Division	3,740	3,754
Ye-u	6,835	6,833
Sagaing	5,373	5,449
Lower Chindwin	5,579	5,600
Upper Chindwin	6,858	6,852
Central (Sagaing) Division	5,829	5,865
Myingyan	5,687	5,722
Pakôkku	5,922	5,958
Minbu	6,414	6,422
Magwe	6,987	7,031
Southern (Minbu) Division	6,159	6,191
Kyauksè	5,606	5,638
Meiktila	6,981	6,990
Yamèthin	6,950	6,958
Pyinmana	4,839	4,858
Eastern (Meiktila) Division	6,436	6,451
Lower Burma	6,815	6,842
Upper Burma	5,606	5,631
Burma	6,346	6,363

Persons dependent on the land are divided into the following groups:—

(*a*) Those with interest in the land cultivated.
(*b*) Agricultural labourers.
(*c*) Growers of special products.
(*d*) Agricultural training and supervision.

"The first group contains landlords who let out their land, but do not work it.

"Of these there are but 58,771, including dependents, or if we take males over fourteen alone, then there are but 17,892 in Lower and Upper Burma together. In Lower Burma alone there were, in 1881, 12,886 males over fourteen years of age returned as proprietors who do not cultivate. From the tables it is clear that the number of persons who live on the rent of land is greater actually and proportionately in Upper Burma. There were of males of all ages in Lower Burma but 18,581 persons who lived on the rent of land. Calculating the due proportion of those who would be over fourteen years of age, we find that there were 11,591 males over fourteen years of age who depended for their livelihood on the rent of land in 1891, as against 12,886 in 1881.

"Of land occupants cultivating, there are 2,475,010 souls including dependents. This single occupation thus absorbs more than 32 per cent., or

in round numbers nearly one-third of the population of Burma. A comparison with the returns of 1881 is rendered more than usually difficult in this instance owing to the unnecessary detail in which the land occupants cultivating were then divided, namely, into wheat and rice growers. It would appear that there were about 363,142 males over fourteen returned under this head against 713,146 males over fourteen returned for the whole of Burma in 1891.

" Allowing for the increase of the population in Lower Burma and for the addition of the inhabitants of Upper Burma, we find that, supposing that there is the same proportion of land occupants cultivating in both provinces, there are 482,277 males over fourteen thus employed in Lower Burma now, being an increase of nearly 33 per cent. Of tenants not cultivating, we have very few, and 607 out of the 625 thus returned are women.

" Tenants and sharers cultivating are again another large section of the community. Of males over fourteen years of age, 217,367 were thus returned. There were in 1881 but 40,893 returned as rice-cultivators who are tenants. The difference is in great measure due to the change in the wording. Our present definition includes sharers as well as tenants. Sharers were not shown separately in 1881 and were in all probability classed as land occupants cultivating, or perhaps as land proprietors. Amongst the Karens this system of sharing is not uncommon. Then, again, the inclusion of Upper Burma has widened the area under review, and the increase of cultivation and population must be taken into account.

" In Upper Burma the tenure of land is very different to the simple uniform system of the Lower province. In the former we have large stretches of *lèdaw* or State land on which the revenue up till lately was assessed by the king taking from one-fourth to one-tenth share of the produce. The workers of *lèdaw* lands are not occupants in the sense of the Land Revenue Act, but tenants of the crown.

Then, again, we find that we have in Upper Burma a wealthy class of landholders, men or the descendants of men who have received grants of land for services rendered to some Burmese King. Ancestral rights over land known as *bobabaing* and royal grants of *minmye* made to courtiers will account for there being more land occupants not cultivating and more tenants in Upper than in Lower Burma.

" There are but few farm labourers returned as such, whereas the item field labourer and crop-watcher absorbs 682,093 persons. Practically, in Burma, where the holdings are small, farm labourers are few, but field labourers and crop-watchers are hired by the job. Moreover it is difficult to draw the line between the farm labourer and field labourer in Burma, where the division of labour is yet in a rudimentary state and high farming is unknown. In this subdivision at the last census there were four occupations returned—hired labourer, paddy planter, paddy reaper and extractor, and paddy watcher. It will probably be unnecessary to compile the occupations apart in future. Of both classes, farm servants and field labourers, there were 229,207 males over fourteen years of age in all Burma as against 92,870 in Lower Burma alone in 1881. If we deduct the proportion of these workers living in Upper Burma, those thus employed were, after allowing for the increase in total population, proportionately nearly twice as numerous in 1891 as they were in 1881.

"Under the head of market gardeners or vegetable growers were placed the *taungya* or *jhoom* cultivators of Burma. On this occupation there are 628,013 workers and dependents, or 8·25 per cent. of the total population. Of males over fourteen there are 181,366 or 7·5 per cent. of the male population of that age thus employed. In 1881 there were only 70,952 males over fourteen engaged on this occupation. Allowing for the increase of the population and for the annexation of Upper Burma we find that there is an appreciable increase in the number of *ya* cultivators, as the percentage of *ya* cultivators was only 5·8 of the male working population in 1881, while in 1891 of *ya* cultivators there were in Lower Burma 100,618 males over fourteen years of age, being 6·5 per cent. of the total male working population.

"ABSTRACT E.—*Showing the proportionate number working at the several agricultural occupations per 10,000 agriculturists by districts and divisions.*

District.	Land occupants not cultivating.	Land occupants cultivating.	Tenants not cultivating.	Tenants and sharers cultivating.	Field and farm labourers.	Growers of special products.
Mandalay	64	3,354	...	1,753	1,260	3,569
Bhamo	7	7,272	...	269	450	2,011
Katha	2	4,306	...	738	566	4,388
Ruby Mines	4	7,885	·2	21	132	1,956
Shwebo	116	7,497	·2	1,497	710	178
Northern Division... ...	62	5,485	·5	1,269	838	2,345
Ye-u	209	8,115	...	1,257	352	67
Sagaing	198	4,321	...	2,219	995	2,267
Lower Chindwin	440	5,688	...	2,912	232	728
Upper Chindwin	77	5,551	...	2,380	1,343	649
Central Division	266	5,593	...	2,318	674	1,149
Myingyan	156	4,759	...	1,392	485	3,208
Pakôkku	137	3,681	...	2,486	676	3,020
Minbu	77	2,597	...	4,642	286	2,398
Magwe	120	4,022	...	833	377	4,648
Southern Division... ...	126	3,846	·02	2,247	469	3,311
Kyauksè	38	4,512	...	1,361	2,533	1,556
Meiktila	118	7,771	·7	803	496	811
Yamèthin	113	5,683	...	2,900	392	912
Pyinmana	84	4,984	...	2,187	441	2,304
Eastern Division	98	6,245	·2	1,682	867	1,107
Upper Burma	142	5,001	·1	1,999	655	2,202
Lower and Upper Burma ...	122	5,127	·1	1,527	1,414	1,809

This table brings out clearly what was before stated, that in proportion to the total number of agriculturists, while there are fewer land occupants not cultivating in Burma, there are more land occupants who cultivate their own fields and proportionately fewer tenants and sharers. As a fact there are in Lower Burma 35,218 persons living by the former occupation as against 350,158 of the same calling in the Upper province. It may be

noted that these abstracts were prepared some time before the appearance of the Revenue Administration Report of the year 1891-92. In paragraph 9 of the Chief Commissioner's Resolution on this report the Chief Commissioner remarks that "it appears that a landlord class is being formed in "Burma, that this class is drawn for the most part from the agricultural "population, but that a class of non-agricultural landlords is also in pro-"cess of formation, and that the process is more rapid in Pegu than else-"where." Owing to the fact that land in Burma is often rented out on the system of the landlords sharing in the profits, the method of classification adopted has to some extent marked the true number of land occupants not cultivating, or "non-agricultural landlords" as they are termed in the report above quoted.

"In Upper Burma the proportion of tenants and sharers cultivating to the total number of agriculturists is far higher than in Lower Burma. If we take the two items of land occupants not cultivating and tenants and sharers cultivating, we find that for every 1,000 of the former in Lower Burma there are but 668·7 in Upper Burma, while for every 1,000 of the latter in Lower Burma there are 812·75 in Upper Burma. The only explanation of this disproportion is that the landlords in Upper Burma have large holdings or that the workers of State lands here returned themselves as tenants. Both explanations are probably correct.

"In proportion to the total population we find that there are 7·5 land occupants not cultivating and 87 tenants and sharers cultivating out of every 1,000 persons in Lower Burma, and 7·9 land occupants not cultivating and 112 tenants and sharers in Upper Burma out of the same number. Of the remaining occupations, the most important are tea, coffee, tobacco, and cinchona planters; betel-vine, sugarcane and areca-nut growers; cardamom, til-seed and pepper-growers; and fruit growers. The first of these groups is composed chiefly of tobacco growers and their families. The Burman country-folk do not drink tea, but eat the pickled leaves of one of the varieties of the tea plant. Tobacco growing is chiefly carried on in the Tharrawaddy, Henzada, Thayetmyo, Katha, Myingyan, and Pakkôku districts, on the alluvial banks of the Irrawaddy, and in the numerous islands that are formed in that river in the dry weather. Betel-vine, sugarcane, and areca-nut growers are lumped together, and it is impossible to separate them except by referring to the district table. In Akyab, Hanthawaddy, Prome, Thôngwa, Bassein, and Henzada the majority of those thus returned are betel-vine growers, with a few sugarcane growers; in Amherst, Toungoo and Shwegyin areca-nut palms and sugarcane are largely cultivated.

"Cardamom, til-seed, and pepper growers are a still more numerous body. Few earn a livelihood by growing cardamoms and pepper alone, but til-seed is grown in large quantities in Thayetmyo, Shwegyin, Sagaing, Magwe, and especially in Myingyan.

"Fruit-growers have, next to market gardeners, the most numerous following of any occupation in this group. Eighty-seven thousand and thirty-three persons live by their fruit trees. They are most numerous in the deltaic districts, such as Hanthawaddy, Pegu, Tharrawaddy, Thôngwa, Bassein, Henzada, Amherst, Tavoy, Mergui, and Shwegyin, and, except in Mandalay, there are but few in Upper Burma.

"Class D includes the bulk of the various trades and handicrafts pursued in the country. It is divided into 11 orders, 37 groups, and 270 different heads, each denoting one and sometimes more than one occupation. The reason of this latter arrangement of placing what are often separate occupations under one head is that, in a comparatively rude state of civilization, the preparation and the supply, or the manufacture and the sale, of an article of commerce are both performed by the same man.

"The first group deals with the suppliers of animal food. Of these, there are 231,478, including dependents, being 3·04 per cent. of the total population. By far the most important of these occupations is that of fishermen and fish-curers. These form 2·2 per cent. of the total population.

"Very few of this occupation are found in Upper Burma; indeed we find that in Thôngwa district alone there are 34,244 souls dependent on this occupation, while there were in the whole of Upper Burma only 73,870 persons engaged in or dependent on these means of livelihood, being 34 per cent. of the total population returned under these heads; so that we may safely conclude that, out of the 61,794 fishermen and fish-dealers, 42,612 are found in Lower Burma.

"Just as the greater number of fishermen are found in the deltaic districts so the majority of toddy-climbers are found in Upper Burma. In the districts of Shwebo, Sagaing, Lower Chindwin, Myingyan, Pakôkku, Minbu, Magwe, Kyauksè, and Meiktila toddy-drawers are most numerous; indeed, Myingyan and Pakôkku alone contain 40,667 or almost half of those dependent on this industry.

"Oil-dealers are fairly evenly distributed throughout Burma. Even in those villages where til is not cultivated we find that some villager has a *si-sôn* or oil-press. It is at first sight difficult to understand why the oil-pressing industry should not be confined to places where the til-seed is produced, so that the cost of carriage might be saved. The only reason that can be assigned is that til-seed oil is much adulterated by the oil of ground-nuts, imported in large quantities for this very purpose from Madras. By pressing his own oil the villager can be sure of its purity. Among kerosine-oil sellers are included the workers of the petroleum oil-wells. As these wells are confined to the oil-fields of Yenangyaung in the Magwe district and to the Kyaukpyu fields, it is in these districts that we may expect to find kerosine oil-sellers most numerous in proportion to the population; indeed, 34·7 of the whole population included under this head is to be found in the Magwe district.

"In wood-carving the Burmese excel, and the wealth of imagery and ornament which is found on some of the Burmese monasteries is perhaps unequalled in its own peculiar line throughout the world. In Mandalay more than 61 per cent. of the total number of wood-carvers were enumerated. They congregated in Mandalay, as in that capital of the old Burmese kingdom the artist found the best market for his labour. Next to Mandalay comes Rangoon, where 10 per cent. of the total numbers of carvers were found. In Prome, Henzada, Pakôkku, Tharrawaddy, and Shwegyin a few persons returned themselves as living by wood-carving alone. But the majority of wood-carvers—men who were not clever enough to live by wood carving alone—have returned themselves as carpenters, furniture and box-makers. Of lacquerers and turners and their dependents there were 12,081.

More than half of these were returned in Myingyan district, which now includes Pagan, the headquarters of lacquer-ware workers. In Mandalay they are also numerous, and are also found in large numbers in the Lower Chindwin, Minbu, and Magwe districts.

"Loom-makers are still fairly numerous in Minbu, Pakôkku, and Mandalay, but except in Prome and Tharrawaddy, the industry is now almost extinct in Lower Burma. Silkworm-gatherers and cocoon-gatherers number 3,229 of both sexes, and formerly this industry was followed by the Yabeins. The Burmese Buddhists look on the taking of life as a sin and look down with contempt on the man who takes life habitually in the course of his occupation. The Yabeins are hereditary silkworm-rearers from inclination, because it pays, not from force of custom or caste. Many Yabein villages have abandoned this industry and have, especially in the Pegu district, taken to agriculture instead. Silkworm-rearers are most numerous in Prome, Toungoo, Pyinmana, and Magwe. But while the Yabeins have taken to agriculture, the Karens have, in some cases, taken to silkworm rearing. The silk carders and weavers are a numerous class; Mandalay and Prome are the headquarters of this industry. But this industry, too, is losing ground and Manchester piece-goods are driving the native products out of the market.

"Cotton is grown largely in the Myingyan district, and in most of the Upper Burma districts a little cotton is produced, but we have no cotton mills in the country, and, though a little cotton yarn may be made and consumed locally, nearly all the cotton yarn that is woven is imported. There are 229,185 persons engaged or dependent on this industry, of whom but 16,530 are males over 14 years of age, and but 39,142 males of all ages included in this category as cotton weavers, while 190,043 females are thus shown. We find that 38,797 weavers and their dependents live in the towns and 190,388 live in the country.

"Weavers are comparatively few in Lower Burma and most numerous in Mandalay, Pakôkku, Lower Chindwin, Myingyan, and Sagaing. Weaving in Burma is essentially an occupation pursued by females; and chiefly now in the rural tracts. Weaving in Lower Burma is the work of the young girls of the house. In the old days every woman plied her loom, and the loom is mentioned as being the woman's and not the man's property in the Burmese law books. Manchester goods have reduced weaving from the position of the chief industry of women to a secondary place. Instead of working at their looms at home, now that weaving is no longer lucrative, the Burmese girl prefers to keep a stall in the bazaar. The thrifty housewife in the rural tracts and smaller towns of Lower Burma still keeps her loom to employ her spare time and keep her daughters employed and out of mischief, but the loom is gradually falling more and more out of favour. The cloth woven is coarse but strong, and in Lower Burma it but just repays the weaver to weave for her own household, because she can profitably employ time which would otherwise be wasted.

"Of *pôngyis* there were in Lower Burma 13,613 and in Upper Burma 11,894. In 1881 there were only 6,498 *pôngyis*. Of *upazins* or probationers there were in 1891 6,668 in Lower and 14,109 in Upper Burma. In 1881 there were but 626 *upazins* returned in Lower Burma. Of novices and *koyins*, of whom rather more than half are under 15 years of age,

there were 13,571 in Lower and 31,798 in Upper Burma, while in 1881 there were but 1,386 in Lower Burma. It is very certain that not only were the lesser clergy understated, but a large number of *pôngyis* must have been omitted in 1881, as there is no reason to suppose that they have more than doubled their numbers in the last decade, nor is there any reason to doubt the accuracy of the return of 1891, as special instructions were issued and were carefully carried out by the district officers. But still some explanation is required for the enormous disproportion in the distribution of *upazins* and *koyins* between Upper and Lower Burma. The difference in the latter is due to the fact that there are practically no lay schools in Upper Burma and the monastic schools have the monopoly. Accordingly we should expect a far greater number of novices in the upper province. There being more novices will account for there being more probationers or *upazins*, but why there should be fewer *pôngyis* in Upper Burma is somewhat remarkable considering the large number of probationers. This is due to the fact that a large number of the Lower Burma *pôngyis* have graduated in Upper Burma, where the standard of Buddhist learning is higher. In the large number of monasteries in Upper Burma it is not an uncommon thing to find several probationers, while to find more than one in any monastery in Lower Burma is comparatively of rare occurrence. Moreover, the superior sanctity and learning of the Upper Burma monks is to be traced to the fact that till the annexation the King of Upper Burma was the head of the Buddhist Church in secular matters and the *thathanabaing* or arch abbot lived in Mandalay, the old capital. Hence the greater popularity of the monastic order in Upper Burma is easily accounted for, while the comparatively small number of *pôngyis* is explained by the emigration of those who have graduated to vacant *kyaungs* in Lower Burma. It is very probable that, as the cause is now removed, we may expect to find a greater equality in the proportions of various ranks of the Buddhist hierarchy in 1901.

"Besides the regular monastic order, there are in Burma male and female religious mendicants. These are bound by no vows except by vows of poverty and celibacy. They pretend to no sanctity and are really only lay brethren and lay sisters. The male mendicants are known as *pothudaw* and the female as *methila*. They are more common in Upper Burma, Mandalay possessing by far the largest share. One or two scribes are often found attached to some well-known *pôngyi* or located in the large monasteries. They are employed in transcribing with an iron style or *kanyutdan* (ကညွတ်တ§။) on palm leaves the Burmese sacred writings of which most monasteries possess a small library. There is good reason to believe that, owing to the extensive and increasing use of the press in the reproduction of Burmese religious books, these private clerks are gradually decreasing in numbers, and at the next census they may have almost entirely disappeared.

"Of astrologers, genealogists, and horoscope-casters, there were, after allowing for dependents, 286 in the same province. This corroborates the previous inference that Burmese quackery has not yet lost its hold over the people."

The total population of Upper Burma in 1891, excluding the Shan States and the Kachin and Chin Hills, was 3,063,426. The

most populous district, next to Mandalay, was Sagaing, with 135 inhabitants to the square mile; the least populous was the Upper Chindwin, with 5·14 persons to the square mile. The density of population in Upper Burma was 36·69; in Lower Burma 52·96 to the square mile. Upper and Lower Burma, excluding the Shan States, form the largest province of the Indian Empire in size, but, with the exception of Assam, it contains the fewest inhabitants, and is moreover the least densely populated of any.

Trade.

For some time before the annexation the trade of Upper Burma had been almost entirely with the lower country. The Mahomedan rebellion in Yünnan, which broke out shortly after the Second Burmese War, put a stop to the caravan traffic, and it was not really revived till some years after the British occupation of the country, when we were able to put an end to the blackmailing of the Kachins.

In 1830 it was roughly estimated that the export trade was worth Rs. 5,00,000 and the import Rs. 3,00,000, but it was thought that this was too high.

In 1862 a commercial treaty was made with the King of Burma, providing for an optional abolition of customs dues on both sides; but, although the British Government ceased to collect frontier dues, the Burmese Government made no alteration. In 1867 another treaty was made, and the Burmans reduced the duty on imports from ten to five per cent., being partly induced to do so by the Myingun Prince's rebellion.

In 1863-64 the gross value of the trade was Rs. 1,12,89,338, which in 1865-66 had risen to Rs. 1,55,99,053, but in the following year it fell by twenty-seven lakhs.

In 1873-74 the value of the imports to Lower Burma by the Irrawaddy and Sittang routes was Rs. 1,29,21,790 and the exports Rs. 1,29,76,450.

In 1878-79 these had risen to Rs. 1,92,09,140 and Rs. 1,76,09,623 respectively. Trade, however, fell off considerably after the accession of King Thibaw, first after the massacres, and then after the withdrawal of the British Resident. In 1883-84 the total value of the traffic of the year was Rs. 4,92,46,720; in the following year it was Rs. 5,11,14,980, but the war in 1885-86 brought the amount down to Rs. 4,03,34,050. In the Administration Report for the year it is noted: "The import trade over land routes fell off enor-"mously. The value of the trade which passed Allanmyo and

"Toungoo, the stations at which the bulk of the trade of this kind "is registered, was little more than one-third as large as the value of "the trade which passed these stations in the previous year. The "principal decrease was in the imports of cattle. In exports the "falling off was small, as the decrease by the Thayetmyo district "was nearly counterbalanced by an increase by the routes in the "Tenasserim division."

The traffic on the Irrawaddy soon regained its old importance. The river trade is to a great extent in the hands of the Irrawaddy Flotilla Company, which largely increased its operations, and the boat traffic soon almost resumed the position it held prior to the annexation. The subjoined table contains statistics of the boat traffic during the years immediately before and after the annexation:—

Year.	Up.		Down.		Total.	
	Number.	Tonnage.	Number.	Tonnage.	Number.	Tonnage.
1884-85 ...	7,120	80,542	7,135	81,638	14,255	162,180
1885-86 ...	7,405	82,276	5,949	65,802	13,354	148,078
1886-87 ...	4,433	45,703	4,638	45,091	9,071	90,794
1887-88 ..	5,862	72,178	6,550	73,922	12,412	146,100

The registration of trade with the Shan States began in 1887-88 in Mandalay and in the Eastern division, and some information was obtained from other places, though the statistics were not altogether accurate. Trade with Yünnan and the Kachin hills was registered at Bhamo. In 1887-88 the number of pedlars or pedestrian traders arriving in Mandalay from the Shan States was 5,629 and of laden bullocks 13,300; in the following year the number of pedlars was 1,965 and of bullocks 27,170, the difference of the method of carriage showing the more settled state of the country. The goods brought consisted of tea, wet and dry, resin, sessamum, turmeric, ginger, cigar-leaves, wood-oil, raw sugar, onions, leather and leather ropes, paper umbrellas, pith, fibre, drugs and fruits. In 1887-88 the value was Rs. 4,56,520, in 1888-89 Rs. 7,30,270. The return trade was mostly in salt, *ngapi*, cotton piece-goods, cotton cloth, cotton twist and articles of English manufacture, broad-cloth, velvet, and silk for turbans.

The export trade from Bhamo to China followed two main routes, but neither of them was safe until the Kachin tribesmen had been

brought to subjection, four or five years after the annexation. These routes were the Taping river or northern, and the Shweli river or southern route. The former proceeds by Sikaw and Manwaing (Manyün) to T'êngyüeh (Momien), and the latter by Sawadi and the Chinese Shan States on the right bank of the Shweli to Yungch'ang. The Kachins demanded a toll of three annas for every baggage animal passing between Manmaw (Sikaw) and T'êng-Yüeh. There was a standing committee of Chinese traders at Manwaing, whose business it was to make arrangements with the Kachins for the safe conduct of each caravan, to investigate complaints, and to deal with questions arising out of attacks on trading parties. For some years merchants continued to travel in very large caravans of from five hundred to one thousand animals for the sake of greater security. The roads became much safer after the Kachin expeditions of 1890—93, but perfect safety was not to be expected until the Burma-China frontier was finally delimitated. For a considerable time raw cotton was nearly the only export from Bhamo to China, but later piece goods and twist and yarn were added. The import trade consists of ponies and mules, horns, hides, orpiment, and raw silk. Of the total quantity of cotton which leaves Bhamo it is calculated that three-tenths are sold in the Chinese Shan States, three-tenths in the T'êng-yüeh district of China, and four-tenths at places beyond T'êng-yüeh. Yünnan-fu is the limit of the profitable sale of cotton from the Burma side.

In the Southern Shan States trade increased rapidly. In 1888-89 the number of laden bullocks coming to the plains was estimated at 24,764 as against 18,900 in the previous year, and the value of the 24,764 loads was calculated at Rs. 3,00,000. There were in addition three thousand loads carried by foot traders and valued at Rs. 15,000. The imports from these states were cheroot leaves, lac, ginger, peas, onions, varnish, paper, buffalo hides and horns, buffaloes, tea, ponies, sugarcane, potatoes, oranges, wax, chillies, silk, tobacco, saffron, bullocks, and honey. The exports to the Shan plateau consisted of dried fish, oil, piece-goods, salt, matches, dates, condensed milk, candles, sugar, umbrellas, plates, and Burmese wearing apparel.

The Kachins export ivory, jade, amber, India-rubber, wax, and peacock's feathers. Of particular exports from districts, the following are the most notable. Katha sends sandstone boulders to Mandalay and mats and gold to all parts, while Myadaung builds a good many boats; Kyanhnyat and Tagaung do a considerable pottery trade, and the latter place sends out wood for Burmese sandals. Shwebo does a considerable trade in glazed earthenware jars, as well as in cutch and jaggery. The Upper Chindwin sends

tea-seed to Assam; Sagaing, besides exporting much wheat, gram, salt, til-seed, cotton, and palm sugar, has a specialty in stone figures and lime. The Chins export bees-wax, honey, hides, horns, and mats, and send many buffaloes to Assam through Manipur. In the Minbu division the principal articles of trade are cattle and earth-oil from Yenangyaung; sessamum oil and steatite from Minbu; lacquer-ware and jaggery from Pagan; and mats, wax, ivory, saffron, and cochineal from Yaw.

The system of trade registration was in a more or less experimental and progressive state until 1892, when it was thoroughly revised, and the Trade registration department placed under the Director of Land Records and Agriculture and rendered more simple and uniform.

The value of the inland trade generally for the three years ending with the 31st March 1896 showed an increase of Rs. 2,51,33,398 or 66·99 per cent. over that registered during the preceding triennial period. Some of this apparent large increase was due to better means of registration, but the bulk was actual new or revived trade. The imports increased by 55·63 per cent. and the exports by 85·61 per cent. The trade of the Upper Province showed an increase of Rs. 2,02,08,287, or 106·99 per cent., and the trade of the Lower Province an increase of Rs. 4,925·111, or 26·44 per cent. The high percentage of increase in the trade of Upper Burma was due to the increased safety of the trade routes communicating with Western China, improved communications with the Shan States, and greater accuracy of registration. Trade in 1895-96 was, however, 8·33 per cent. less than in 1894-95, the recorded value being Rs. 2,11,12,242 against Rs. 2,30,31,362. This was entirely due to a decline of 14·42 per cent. in the trade of the Upper Province; but in 1894-95 overland trade with China received a special impetus owing to the China-Japan war. Trade between Lower Burma and Karen-ni increased by 33·78 per cent., but, excluding timber, the import trade showed a slight decline, compared with that of the preceding triennial period. The export trade, however, has steadily expanded. The traffic in timber during the three years preceding 1896 showed a slight decrease of 1·52 per cent. in quantity and an increase of 21·29 per cent. in value compared with the preceding triennial period, the increase in value being due to the enhanced rates ruling in Moulmein.

The means of transport employed in the trade with the Shan States and China are ponies, mules, pack-bullocks, and carts, and a steadily decreasing number of pedlars or foot traders, who now carry on their trade more along the bye-routes than on the main

lines of commerce. The trade between Burma and Western China is registered at Bhamo and Myothit in the Bhamo district, Maymyo in the Mandalay district, and Myittha in the Kyauksè district. The principal articles imported are stick-lac, raw silk, apparel, orpiment, and Chinese gold-leaf. The principal articles exported are Indian twist and yarn (which is preferred to that from Europe), and cotton, silk, and woollen piece-goods. Large quantities of treasure, both specie and bullion, are imported and exported, the reasons for which are not very clear, for the amounts are nearly equal. For the triennial period ending with the 31st March 1896 the percentage of increase of the trade with Western China was 134·61 ; the increase in imports was 230·07 per cent. and in exports 84·29 per cent. The trade in 1895-96 was only twenty-two lakhs against thirty-two lakhs in 1894-95 and twenty-seven lakhs in 1893-94. As above noted, however, the 1894-95 trade was abnormal, owing to the China-Japan war. The most noticeable decreases in imports were under raw silk, gold, and silver, and in exports under raw cotton, European cotton piece-goods, and silver.

The trade between Upper Burma and the Northern Shan States is registered at Bhamo, Myothit, Sawadi, Sagadaung, Bahè, and Maymyo. The merchandise trade of 1895-96 amounted to thirty-five lakhs against thirty-eight lakhs in 1893-94 and forty lakhs in 1894-95. The decrease was in Bombay twist and yarn under exports, owing to over-importation in the preceding year. Under imports there was a decrease in the item of *letpet*, or wet tea from Tawng Peng, owing to the fact that the previous year's supplies were adulterated and could not be disposed of. As compared with the preceding triennial period the trade with Burma during the three years from 1893 to 1896 showed an increase of 29·56 per cent., the percentage of increase under imports and exports being 20·03 and 45·09 respectively. The most marked increase in articles imported occurred under the heads of precious stones and foreign tea, and in articles exported, under the heads of Indian twist, cotton piece-goods, and salted fish. There was a decrease under the heads of ponies, rice, and cigar-wrappings.

The Southern Shan States trade is recorded at Kywèlèbyin in the Meiktila district, at Pyawbwè and Pyinmana in the Yamèthin district, at Taungdaw, Myittha, and Yewun in the Kyauksè district, and at Maymyo in the Mandalay district. The trade in 1895-96 showed an enormous advance over the previous triennial period. This was entirely due to the returning prosperity of the country under British rule. The percentage of increase of the total trade was 337·62, while under imports and exports the increase was 354·09 and 322·89 respectively. The articles which contributed princi-

pally towards the increase were cattle, fruits, stick-lac, and cigar-wrappings, while under exports the increase was chiefly in twist, European cotton piece-goods, salt, betel-nuts, matches, candles, apparel and glassware. Trade in merchandise increased from seventeen lakhs in 1893-94 to thirty-eight lakhs in 1894-95 and to forty-two lakhs in 1895-96 and in treasure from five lakhs in 1893-94 to seventeen lakhs in 1894-95 and to eighteen lakhs in 1895-96.

The only station at which the river trade of the Province is recorded is Allanmyo on the Irrawaddy, a little way below the old frontier of Lower Burma. The trade on the Sittang by Toungoo has died out and been diverted to the railway, which runs close by. The trade by the road routes from Upper to Lower Burma was recorded as before at Allanmyo, Thayetmyo (two routes), Kyaukpadaung, and Toungoo. The statistics of rail-borne and steamer traffic are obtained from the Railway Accounts office and from the Irrawaddy Flotilla Company, while the statistics of timber rafts on the Irrawaddy and Sittang are supplied by the Forest Officers at Thayetmyo and Toungoo. The recorded value of the trade for 1895-96 was Rs. 8,78,46,243 against Rs. 7,82,88,133 in 1894-95. Imports from Upper into Lower Burma were Rs. 5,08,12,199 against Rs. 4,61,68,019, while exports from Lower to Upper Burma were Rs. 3,70,34,044 against Rs. 3,21,20,114, as compared with the preceding year. There was a general increase during 1895-96 under all heads of trade, but as compared with the preceding triennial period there was during the three years from 1893 to 1896 a decline of 8·52 per cent. in the total weight of steamer traffic and of 1·26 in the rail-borne traffic. This, however, was counterbalanced by an increase of 37·63 per cent. in the weight of the timber floated down from Upper Burma. The proportion of trade carried by various means of transport during 1895-96 was 75·58 per cent. by river (of which 32·21 was carried by steamers, 11·25 by boats, and 32·12 per cent. in timber rafts), 1·71 by road, and 22·71 by rail. During the period 1895-96 trade by road showed a declining tendency both in imports from and in exports to Upper Burma. There was, however, a steady increase in the import trade from Upper Burma, both by rail and steamer. The import trade by rail rose from about 800,000 maunds in 1893-94 to about one and a half million maunds in 1895-96. The articles contributing to the increase were coal from the Kabwet mines, paddy, timber, petroleum, and cutch. There was, however, a falling off in export traffic to Upper Burma both by rail and steamer. The decline was due to diminished exports of grain, owing to a fairly good harvest in the Upper Province, and to lessened exportation of railway materials for construction

purposes; but, though agricultural prospects have been fairly good in most parts of the Upper Province, there is not yet a corresponding increase in the importation of those articles of luxury which are indicative of the rising prosperity of a country. The reason probably is that the traders of Upper Burma are still recovering from the agricultural reverses of former years.

PLATE XXXIII.



Photo-Block. Survey of India Offices, Calcutta, 1899

A WA DANCE.

CHAPTER XVI.

GOVERNMENT AND ADMINISTRATION UNDER THE BURMESE KINGS.

THE Government of Upper Burma under the native Kings was purely despotic. The King's power was absolute; his only restraints were his voluntary respect for Buddhist rules and precepts, general for all believers, or particular to the Kingly estate. Otherwise he was lord and master of the life and property of every one of his subjects. No hereditary rank or title existed in the kingdom, except in the Royal family. Outside of that the King was the source of all honour. Official position was the only sign of rank' and all officials were appointed or dismissed at the King's will. Dismissal usually meant absolute ruin, a step from the Court to the gaol. On the other hand, any one, not a slave or an outcast, might aspire to the highest offices in the State. The country and the people were entirely at the disposal of the King, and the only check on misrule was the fear of insurrection.

Nevertheless the administration was conducted nominally, and, under certain Kings, perhaps actually, on the lines of popular forms of Government. There were ministers whose number, rank, and functions were strictly defined by constitutional precedent, dating from very ancient times. These institutions were well devoloped, with the view of exercising a wholesome check on tyranny, but latterly, and perhaps always, they were mere servile instruments of the Royal will. Yet they were set forth in the most elaborate detail, even to the extent of refined and complex Court ceremonies and etiquette, all of which may be found in the *Lawka-byuha*, a manual of Burmese punctilio.

The Burmese ministers were of two classes, whose duties and status were originally quite distinct. The absolutism of the King destroyed the distinction, and made both functions and position merge in one another. Individual preference overrode all theoretical forms. The first class consisted of those whose authority and responsibility were confined to the palace. Originally no doubt they were mere officers of the household, but such duties afford opportunities not open to mere public officials. The other class consisted of administrative officers properly so-called. This second class constituted the Great Council of State, called the *Hlut* or

Hlutdaw, in which all administrative power was vested. Its members in their collective capacity under the king discharged the functions at once of a House of Legislature, a Cabinet, and a Supreme Court of Justice. The name was applied both to the building and to the officials who met in it. The following details are gathered from the *Lawka-byuha*, from *ex*-ministers, and from all other available sources.

The *Hlutdaw* stood just beyond the inner enclosure of the palace, in front of the *Myenan*, towards the *Taga-ni*, or Main Gate. There was a throne in it for the king when he sat as President of the Council, and there was also a special seat for the Heir-Apparent. Each *wungyi*, or other member of the Supreme Court, had his fixed seat, or rather his position, for of course they all sat on the floor. They had also small offices of their own, not far from the *Hlut*, also in the outer esplanade.

The *Hlutdaw* had absolute authority given to it by the king to govern and administer the whole affairs of the country. It was the Supreme and Final Court of Appeal in his dominions. Every Royal order was registered by and issued through it. The functions of the body were legislative, executive, and judicial. Petitions might be sent on to the king; officials appointed or dismissed; persons imprisoned, or released from gaol, whether for civil or criminal offences; and decrees of the Courts suspended or quashed by its mere order.

The *Hlutdaw*, of its own motion, could order the opening or closing of the city gates at any time of the day or night. The Royal orders, of whatever nature, were brought to the *Hlutdaw* by one of the *Nā-hkandaw*. Any such order, if it was disapproved, could be suspended by the Court until the King had been again petitioned on the subject. No one could disobey a summons of this Court, but the Queens, Princes, and Princesses, Ministers, and high officials were allowed to send proxies or deputies to represent them. No criminals could be executed without the knowledge and approval of the *Hlutdaw*, and orders for the execution were always formally issued by this body to the *Thôndaw-let-ya*, the three gaolers.

No officials appointed directly by the King were considered formally confirmed in their offices until they had obtained the order of the *Hlutdaw* also. This order was called the *hnit-chaung sa-chun* (two lines written on a *pointed* palm-leaf) and was indispensable. All petitions and communications from the Shan *Sawbwas* and Governors of districts were sent to the king through the *Hlutdaw*, not to His Majesty direct. The President of the *Hlut* was

nominally the King himself, or in his absence, the Heir-Apparent or some other member of the Royal Family. Practically, however, the President was the senior *Wun-gyi*, or Prime Minister, if the term may be allowed, where the office was not recognized any more than it is constitutionally recognized in Great Britain.

The following story is told as to the origin of the terms *Hlut*, and *Yôn*, and the reason for the number of four *Wungyis* presiding over the Supreme Court. Narapadi-sithu, the King of Pagan, had five sons—Zayathu, Twetyôntaw, Dingathù, Thethu, and Zeyathanhka. He had once a very bad boil on one of his fingers, and suffered great agony from it. One of the minor Queens, the mother of Zeyathanhka, took the finger in her mouth to alleviate the pain and kept it there till the boil burst. The King was touched by her devotion and promised to grant any favour she might request. He assembled his five sons one day and made them sit in a circle, and placed a white umbrella in the centre of them, and said that he towards whom the umbrella should incline was to be king. The umbrella leant over towards Zeyathanhka, the youngest of them all. The King remembered his promise to the lad's mother and accepted the omen, and Zeyathanhka was named Heir-Apparent. The brothers remained on very good terms with one another, and it was arranged that they should meet together every day to discuss and administer the affairs of the country. Their place of meeting was called *Yôn* or *Rôn*, "the Assembly," and this name has been given to every Court or Council-house ever since. After a time the four brothers said that affairs of State pressed hardly on the King and offered to relieve him of the burden entirely. He agreed to this, and thenceforward the meeting place for the discussion of affairs of State was called the *Hlut*, the "freed" or "released," the Supreme Court. The four brothers then bore the whole burden of affairs (*wun*=burden) and were called *Wungyis*, and this name and the number of four was ever afterwards maintained for the chief officers of the Court.

The *Wungyis* came regularly to the *Hlutdaw* at seven in the morning to arrange the table of *agenda* for the day, and at eight went on to the audience in the Palace, which was called the *Nyilahkan*.

They first went to the *Byè-taik* and conferred with the *Atwinwuns* as to what other matters might be ready for submission to the King during the day, and then all of them, officers civil and military, went in a body to the levée. These daily audiences were usually held in the *Hman-nandaw*, or in the *Lapetye-saing*, and ordinarily occupied a couple of hours.

At noon the *Wungyis* were back again in the *Hlutdaw* to receive petitions and to investigate cases brought up for trial. About three in the afternoon the *Nā-hkandaw* came from the Palace with the King's orders on matters submitted to him. All work was immediately suspended to hear and note the Royal commands. When this was over an adjournment was made to the afternoon audience, called the *Bo-shu*, by some, but not necessarily by all of them. This afternoon levée seldom lasted over an hour, and the ministers then returned to the *Hlutdaw*, or to the *Tè*, the retiring rooms, which each of the regular attenders had, near that building. About five in the evening they usually returned to their homes, so that ten hours a day were their usual office hours.

If any member of the Royal Family or any high official was sentenced to death, the *Hlutdaw* officers sat continuously until the execution of the sentence was formally reported to them. Whenever disturbances broke out in the neighbourhood of the capital, or when there was fire in the city, all members had to go immediately to the *Hlutdaw*, and remained there until permission to retire was given by the King. During any serious crisis in the affairs of the country all the four *Wungyis* were required to sleep inside the Palace enclosure, and they had to do the same whenever the King was laid up with illness.

The following is a list of the officers of the *Hlutdaw*, or Supreme Court. They were fifty-seven in number:—

Four *Wungyis*, Secretaries of State and Judges of the Court of Appeal. Each of these chief Ministers had his own department, but the distribution of work was a personal matter and never unalterably fixed. The *Wungyis* had always territorial titles, but these were not attached to their office, or hereditary, but were given from time to time by the King.

One *Myinsugyi Wun*, Master of the Horse, or Officer Commanding the Principal Cavalry Regiment.

One *Athi Wun*, Minister of Works or Corvées. An *athi* was a person not directly in Government service, but liable to be called on for occasional service.

Four *Wundauks*, Under Secretaries of State, the Assistants of the *Wungyis*. There were often more than four *Wundauks*, but usually only four sat in the *Hlut*. These two classes, the *Wungyis* or *Mingyis* (the terms were synonymous) and the *Wundauks*, formed, with the *Atwinwuns*, what may be called the Ministry. The authority of the *Wungyis* was paramount, but less important

matters were left to the *Wundauks* to settle. All the other members of the *Hlutdaw* were subordinates, to relieve the Secretaries of State of burdensome or formal details.

Four *Nā-hkandaws*, King's Messengers, Bearers of the King's orders from the *Byè-taik* to the *Hlutdaw* and *vice versâ*, Pursuivants. The communications were written in large note-books with gilt covers, which were the insignia of their office.

Eight *Sayedawgyis*, Clerks of the Council or Assistant Secretaries. Their position was somewhat analogous to that of the Registrar of a Court. They held preliminary investigations in important judicial matters and, subject to the Minister's approval, decided unimportant cases themselves. In general business they did most of the actual executive work, and all details were left to them.

Four *Ameindawyes*, Clerks of the King, whose duty it was to record and transcribe Royal orders of all kinds, such as those relating to appointments of officers, leases of forests, and general clerk's work.

Four *Thandawgans*, Heralds, the officers who read the lists of presents before the King at *kadaw-pwè*. They also received all letters written by high officials and feudatory Chiefs who were unable personally to attend and do homage at these "beg-pardon festivals."

Four *Athônsayes*, Superintendents of Government Works. They had to keep Government buildings in repair, and to build new ones when required.

Four *Aweyauks*, Marshals of the Court, the officers who read aloud to the Council letters from the Shan *Sawbwas* or Governors of remote provinces.

Four *Ahmāyes*, Clerks who wrote the orders of the Court to be sent to *Sawbwas* or Governors of provinces. They were what we should call drafters of the orders and despatches of Council.

Two *Myin-sayegyis*, Clerks to the Master of the Horse.

Two *Athi-sayegyis*, Clerks to the Minister of Works.

Four *Myedaing-sayes*, Survey Officers.

One *Letsaungyu Taik-so*, Comptroller of the *Tosha Khana*, who made out lists of all gifts presented to the King.

Two *Thissayas*, Registrars of Oaths, who recited the words of the oath in Court. They also administered the oath of fealty to all who entered the King's service. The

oath was written on paper and read before an image of Gaudama, the candidate repeating the words. The paper was then burnt and the ashes put in a cup of water, which was stirred with miniatures of the bow, the spear or the sword, the musket, and the cannon, by one of which the man would die if he broke fealty.

Two *Taseiksayes*, Clerks of the Seal. The seals were kept in the *Hlutdaw*.

One *Kathōnmyaung Taik-so*, Officer in charge of the *Hlutdaw* expense chest.

One *Neyacha Thwethaukgyi*, Usher of the Court, who arranged the seats for the members and saw that the place was kept in order. The places in the *Hlut* were marked by little holes in the floor through which in ancient times an attendant waiting below thrust up each Minister's pipe-stem and held the bowl for him below.

These fifty-seven officers constituted the regular authorized establishment, but it varied occasionally. King Mindôn had eight *Wungyis*. A list of his officers with their titles is given below.

The place of assembly of the officers whose duties were, or originally were, confined to the interior of the Palace, was called the *byètaik* and was situated to the north of the Palace, close to the *pyathat*, or palace-spire. The word *byè* is thought to be Talaing or Môn, and to mean a bachelor. The *byè-taik* would therefore be the bachelor's chamber. Formerly, it is said, the gentlemen-in-waiting used it while on turn and the King himself occasionally came there to see the elephants exercised. In later times it was used exclusively as a public office, and was as frequently called the *atwin-yôn*, the Inner Court, as the *byè-taik*. In general terms it may be said that the *byè-taik* administered the finances of the country and controlled the army.

Of this second order of Ministers, the four *atwinwuns* formed the first grade. The title means "Interior ministers," and they were technically in direct charge of the affairs of the Palace, but especially to take up business from Council to the King. At first perhaps they may have corresponded to the Board of Green Cloth, the Lord Steward's Department, or the Privy Seal and Private Secretary of the Household. They slept in turn, two at a time, in the Palace, as indeed did also the officers of the *Hlut*. They went to the *byè-taik* at seven in the morning, and every second day they were relieved at three in the afternoon. At nine in the morning the Ministers came in from the *Hlut* and discussed whatever business there might be with the *Atwinwuns*, and then went in with them to the King's

morning levée (*nyi-la-hkan*). In the afternoon there was another informal audience called *bo-shu-hkan*, because military officers were then admitted with the *Atwinwuns* to see the King. In the evening, at about eight, the evening reception was held, and at this also the members of the *Hlut* were present. Business of a special character, however, was usually settled during the day. In the evening all was quiet; strangers were not admitted, and general affairs of State of all kinds were discussed.

The relative rank of the *Atwinwuns* with members of the Council was not absolutely defined. In Crawford's time it was said to be a moot point whether they were above or below the *Wundauks*. Latterly they were certainly above them, but it may be said that individual influence with the King overrode all nominal rank. Often an *Atwinwun* in particular favour was greatly dreaded by the *Wungyis*. In a way they resembled the Officers of the Lord Chamberlain's Department as having control of the accounts and especial charge of revenue matters. Under them were the four *A-hkunwuns*, Revenue officers in charge of special districts outside of the capital. These were—

The *Myauk ta-pyin*, in charge of the north exterior.

The *Taung ta-pyin*, in charge of the south exterior.

The *Ashe ta-pyin*, in charge of the east exterior.

The *Anauk ta-pyin*, in charge of the west exterior.

Each of these *A-hkunwuns* had four *A-hkunsayes*, or tax clerks, as subordinates, to do his office work for him, and under these again came the provincial officials, who collected the revenue in their particular districts.

Next in rank to the *Atwinwuns* in the *Byè-taik* were the four *Thandawsins*. They were always in attendance at audiences to take down the King's orders, and to transmit them to the *Hlut*. They also carried forth in state from the Palace all Royal letters, and performed generally the ceremonial offices of an apparitor in an Ecclesiastical Court. They also read petitions aloud to the King at private audiences. No one but the *Thandawsins* could present petitions in the *Byè-taik*. They were allowed to act as advocates on occasion, and were supposed to be specially qualified, though they were appointed in haphazard fashion. In other Courts any one engaged by the suitors might appear as an advocate. The petitions of both parties were read out by the *Na-hkans*, and it was these officers also who communicated the decision of the Court.

There were eight *Byè-taik Thansins*, who were the clerks of the *Atwinwuns*.

Attached to the *Byè-taik* appear also to have been the *Si-mi-dôn-hmu*, who were nominally officers in charge of the lighting of the Palace, but actually had more important work. They kept a record of persons sleeping inside the Palace, and warned those whose turn it was to remain on duty all night when their turn came. Any one found inside the main gate after dark whose name was not down in the *Si-mi-dôn-hmus'* books would be liable to grave suspicion and to punishment.

The last grade of the *Byè-taik* officials was the *Tindan Yan-hmu*, whose functions were rather menial than administrative. They looked after the furniture and appointments of the Palace and kept all in order. Their number, like the number of the *Si-mi-dôn-hmu*, is not specified.

These two Councils, the Public or the Cabinet and the Privy Council, as it was the fashion to call them, for the whole of this century at any rate, were mere relics of a constitution which had lost all real power. The members of both were mere nominees of the King and the instruments for carrying out his orders.

The *Wungyis* very rarely ventured to press disagreeable advice on the King, or even to give him unpleasant intelligence. When it was necessary they pledged themselves to stand by one another. One of them began the dangerous communication. If the King looked displeased, another took up the discourse, and the third and fourth chimed in when opportunity offered. Thus the King did not know whom to punish. It was not every King who was as thorough as King Bagyidaw. He sent the whole of them to the pillory.

Wherever the King went, even for the most temporary stay, a *Hlutdaw* was built in its proper relative position to the temporary Palace.

The *Wungyis*, and the higher officials generally, were designated by the title of some office which they held, or more commonly by some territorial title derived from the district or township which they "ate," or held in *jaghir*, like the Persian satraps in Xenophon's time. Originally this was their ostensible source of income. Most of the country was thus parcelled out in districts among various officials, some of whom managed them directly, though the majority, being great officers of State, ruled them by deputy. The *Myo-sa*, or town-eater, paid a fixed annual sum to the king for the province he governed, and whatever he obtained by taxation or otherwise over and above this amount was his salary. King Mindôn, however, put an end to this, and decreed that all officials should have regular salaries, which he fixed. But the old titles remained and, if the

people are to be believed, most of the old practices, or malpractices.

The chief Civil and Criminal Courts of First Instance at the capital stood, like the *Hlut*, literally at the King's Gate, but, instead of being in the outer esplanade, they were outside the Palace enclosure altogether, close by the East Gate. The *She-yôn*, or Criminal Court, disposed of cases arising in Mandalay, but not of appeals. All criminal appeals went to the *Hlut*. The *Tayā-yôn*, or Civil Court, dealt with important business arising at the capital, and heard appeals from provincial and subordinate Courts. Appeals relating to landed property and hereditary offices, however, went to the *Hlut*, from whose jurisdiction no civil case, at least in theory, was excluded.

There was also the *Anauk-yôn*, the Western, or Women's Court, which seems to have devoted itself to cases in which ladies of the Palace were concerned. The officers of these three Courts were—

OFFICERS OF THE SHE-YÔN OR YAZAWUT YÔN, THE POLICE COURT.

Two *Myowuns*, Governors of the Royal City and Presiding over the Lord Mayor's Court.
Four *Taunghmus*, Assistants to the Police Magistrate.
Four *Myosayes*, Town clerks, or bailiffs.
One *Shwepyiso*, Alderman, or *thugyi* of the city.
Four *Taungsachis*, Gaolers.

OFFICERS OF THE TAYĀ-YÔN OR TARAMA YÔN, THE CIVIL COURT.

Two *Tarama thugyis*, Chief Justices.
Four *Tarama hkans*, Justices or Puisne Judges.
Four *Taya-sayes*, Clerks of the Court.
Four *Ameindawyas*, Pleaders of the High Court.

V.—OFFICERS OF THE ANAUK-YÔN, THE WOMEN'S COURT.

Four *Anaukwuns*, Governors of the Ladies' Court.
Four *Anaukwunsayes*, Clerks to these officers.
Four *Kadawsayes*, Clerks who kept the list of the wives of officials and noted that they paid regular homage.

These five Courts—the *Hlutdaw*, the *Byè-taik*, the *She-yôn*, the *Tayā-yôn*, and *the Anauk-yôn*—went by the name of the *Hlut-yôn Ngayet*.

Besides these five Courts in Mandalay there was the *Kalawun's* Court, which took cognizance of all civil cases, to any amount, aris-

ing between the foreigners resident in Mandalay, or between them and Burmans.

The *Kalawun* received no fixed salary, but drew a ten *per cent.* fee on all property in issue. Appeals lay from his Court to the *Tarama-yôn* and thence to the *Hlut.*

In the *Hlutdaw* the *Wungyis* alone were competent to pronounce judgment on cases, criminal as well as civil. If there was a press of work, or in urgent cases, petitions were read before the *Wundauks,* who made their notes on the suit, marked points for enquiry, and passed the file to the *Sayedawgyis.* These officers passed them on to the *Sayes,* who wrote out the plaints and defence, and returned the papers through the *Sayedawgyis* to the *Wundauks.* The whole proceediugs were then submitted to the *Wungyis,* who passed judgment.

Subjoined is a list of the officers of the *Hlut-yôn Ngayet* in King Mindôn's time, specifying the territorial and personal title of each officer.

I.—*Hlutdaw* (လွှတ်တော်။)

မကွေးမြို့စားဝန်ကြီး ... ... Magwe *Myoza Wungyi* ...	......
မြထောင်မြို့စားဝန်ကြီး ... ... Myadaung *Myoza Wungyi* ...	......
သလုံးမြို့စားဝန်ကြီး ... ... Thalôn *Myoza Wungyi* ...	......
ပုခန်းမြို့စားဝန်ကြီး ... ... Pagan *Myoza Wungyi* ...	သတိုးမင်းကြီးမဟာမင်းလှစည်သူ။ *Thado Mingyi Maha-minhla-sithu.*
လောင်းရှည်မြို့စားဝန်ကြီး ... Laungshe *Myoza Wungyi* ...	သတိုးမင်းကြီးမဟာစည်သူ။ *Thado Mingyi Maha-sithu.*
ရေနံချောင်းမြို့စားဝန်ကြီး ... Yenangyaung *Myoza Wungyi*...	သတိုးမင်းကြီးမဟာမင်းကျော်မင်းခေါင်။ *Thado Mingyi Maha-minkyaw-minhkaung.*
ခန်းပတ်မြို့စားဝန်ကြီး ... ... Hkampat *Myoza Wungyi* ...	သတိုးမင်းကြီးသီရိမဟာမင်းခေါင်ဥဇနာ။ *Thado Mingyi Thiri-maha-mind-hkaung-uzana.*
လယ်တိုင်းမြို့စားဝန်ကြီး ... ... Lègaing *Myoza Wungyi* ...	သတိုးမင်းကြီးမဟာစည်သူ။ *Thado Mingyi Maha-sithu.*
မြင်းစုကြီးဝန် ... ... *Myin-sugyi-wun* ...	မင်းကြီးမင်းလှမင်းတင်။ *Mingyi Minhla-mindin.*
အသည်ဝန် ... ... *Athi-wun* ...	မင်းကြီးမဟာသီဟသူယ။ *Mingyi Maha-thiha-thuya.*
ပုပ္ပါးဝန်ထောက် ... ... Pôppa *Wundauk* ...	မင်းကြီးမဟာမင်းလှမင်းကျော်။ *Mingyi Maha-minhla-minkyaw.*

ကင်းစည်ဝန်ထောက် ... Kinsin *Wundauk*	... မင်းကြီးမင်းခေါင်မဟာမင်းကျော်သူရိန်။ ... *Mingyi Minhkaung-maha-min-kyaw-thurein*
ရန်အောင်မြင်းဝန်ထောက် Yanaungmyin *Wundauk*	... မင်းကြီးမဟာမင်းခေါင်ရာဇာ။ ... *Mingyi Maha-minhkaung-yaza.*
မြို့သာဝန်ထောက် ... Myotha *Wundauk*	... မင်းကြီးမဟာမင်းထင်စည်သူ။ ... *Mingyi Maha-mindin-sithu.*
မကွေးဝန်ထောက် ... Magwe *Wundauk*	... မင်းကြီးမင်းလှမဟာမင်းခေါင်။ ... *Mingyi Minhla-maha-min-hkaung.*
မြောင်းလှဝန်ထောက် ... Myaunghla *Wundauk*	... မင်းကြီးမဟာဇေယသူရ။ ... *Mingyi Maha-zeyathura.*
နားခံတော် ... *Na-hkandaw* ...	... မဟာမင်းလှမင်းကျော်။ ... *Maha-minhla-minkyaw.*
Ditto ...	... { မင်းထင်ရာဇာသီဟသူ။ *Mintin-yaza-thihathu.*
Ditto ...	... { နေမျိုးမင်းထင်ကျော်ခေါင်။ *Nemyo-mintin Kyawhkaung.*
Ditto ...	... { နေမျိုးနန္တမိတ်စည်သူ။ *Nemyo-nantameit-sithu.*
စာရေးတော်ကြီး ... *Sayedawgyi* ...	... မဟာမင်းလှကျော်ခေါင်။ ... *Maha-minhla-kyawhkaung.*
Ditto ...	... { မဟာမင်းကျော်ရာဇာ။ *Maha-minkyaw-yaza.*
Ditto ...	... { မင်းကျော်သိင်္ခသူ။ *Minkyaw-theinhkathu.*
Ditto ...	... { မင်းလှသီဟသူ။ *Minhla-thihathu.*
အမိန့်တော်ရေး ... *Ameindawye* ...	... မင်းလှမင်းကျော်စည်သူ။ ... *Minhla-minkyaw-sithu.*
Ditto ...	... { မင်းလှရာဇကျော်ထင်။ *Minhla-yaza-kyawtin.*
Ditto ...	... { မင်းထင်ဇေယသူ။ *Mintin-zeyathu.*
Ditto ...	... { နေမျိုးသီရိကျော်ထင်။ *Nemyo-thiri-kyawtin.*
အထုံးစာရေး ... *Athônsaye* ...	... မင်းလှမင်းထင်စည်သူ၊ ... *Minhla-mintin-sithu.*
Ditto ...	... { မင်းလှသီရိရာဇာ။ *Minhla-thiri-yaza.*
Ditto ...	... { မင်းလှမင်းထင်ကျော်။ *Minhla-mintin-kyaw.*
Ditto ...	... { နေမျိုးရာဇာစည်သူ။ *Nemyo-yaza-sithu.*

အမှာရေး ...	... နေမျိုးသီရိကျော်ခေါင်။
Ahmaye ...	... *Nemyo-thiri-kyawhkaung.*
Ditto ...	... နော်ရထာကျော်စွာ။ *Nawra-tah-kyawswa.*
Ditto ...	... နေမျိုးသင်္ခယာ။ *Nemyo-thinhkaya.*
Ditto ...	... နေမျိုးသီရိကျော်ထင်။ *Nemyo-thiri-kyawtin.*
အဝေးရောက် ...	... နေမျိုးစည်သူကျော်ခေါင်။
Aweyauk ...	... *Nemyo-sithu-kyawhkauag.*
Ditto ...	... နေမျိုးသီရိသင်္ခယာ။ *Nemyo-thiri-thinhkaya.*
Ditto ...	... ရွှေတောင်သီရိနော်ရထာ။ *Shwetaung-thiri-nawrahta.*
Ditto ...	... နေမျိုးသီရိရာဇာ။ *Nemyo-thiri-yaza.*
သံတော်ခံ ...	... နေမျိုးစည်သူရာဇာ။
Thandawhkan ...	... *Nemyo-sithu-yaza.*
Ditto ...	... နေမျိုးသီရိကျော်သူ။ *Nemyo-thiri-kyawthu.*
Ditto ...	... နေမျိုးကျော်ထင်ရာဇာ။ *Nemyo-kyawtin-yaza.*
Ditto ...	... ဘယာသီရိရွှေတောင်။ *Baya-thiri-shwetaung.*
မြင်းစာရေးကြီး ...	... မင်းလှသိဒ္ဓိ။
Myinsayegi ...	... *Minhla-theiddi.*
Ditto ...	... မင်းကျော်သီရိသင်္ခယာ။ *Minkyaw-thiri-thinhkaya.*
အသည်စာရေးကြီး ...	... နေမျိုးမင်းလှရာဇာ။
Athisayegyi ...	... *Nemyo-minhla-yaza.*
Ditto ...	... နေမျိုးမင်းထင်စည်သူ။ *Nemyo-mintin-sithu.*
လက်ဆောင်ထုတိုက်စိုး ...	... နေမျိုးသီဟသူ။
Letsaungyutaikso ...	.... *Nemyo-thihathu.*
Ditto ...	... နေမျိုးသီရိရာဇသူ။ *Nemyo-thiri-yazathu.*
နေရာချသွေးသောက်ကြီး ...	... ရွှေတောင်လက်ျာဇေယကျော်။
Neyacha-thwethaukgyi	... *Shewtaung-letya-zeyakyaw*

II.—*Byè-taik* (ဗြဲတိုက်။)

ရွှေပြည်အတွင်းဝန် ...	... သတိုးမင်းကြီးမဟာမင်းခေါင်သီဟသူ။
Shwepyi *Atwinwun*	... *Thado Mingyi Maha-min-hkaungthihathu.*

ကန္နီအတွင်းဝန် Kanni *Atwinwun* ...	... မင်းကြီးမဟာမင်းတင်သင်္ခယာ။ *Mingyi Maha-mintin-thinhkaya.*
ယောအတွင်းဝန် Yaw *Atwinwun* ...	... မင်းကြီးမင်းတင်မင်းခေါင်ကျော်။ *Mingyi Mintin-minhkaung-kyaw.*
ရွှေတိုက်အတွင်းဝန် Shwetaik *Atwinwun*	... မင်းကြီးမဟာမင်းတင်စည်သူ။ *Mingyi Maha-mintin-sithu.*
အမြောက်အတွင်းဝန် Amyauk *Atwinwun*	... မင်းကြီးမဟာမင်းခေါင်ဇေယသူ။ *Mingyi Maha-minhkaungze-yathu.*
သံတော်ဆင့် *Thandawsin* ...	... မင်းတင်သီရိသင်္ခယာ။ *Mintin-thiri-thinhkaya.*
Ditto ...	... မင်းလှစည်သူကျော်။ *Minhla-sithukyaw.*
Ditto ...	... မင်းလှမင်းတင်ရာဇာ။ *Minhla-mintin-yaza.*
Ditto ...	... နေမျိုးမင်းလှကျော်သူ။ *Nemyo-minhla-kyawthu.*
ဗြဲတိုက်သံဆင့် *Byè-taik Thansin* ...	... နေမျိုးမင်းလှမင်းတင်ရာဇာ။ *Nemyo-minhla-mintin-yaza.*
Ditto ...	... နေမျိုးသီရိရာဇာ။ *Nemyo-thiri-yaza.*
Ditto ...	... နေမျိုးသီဟသူ။ *Nemyo-thihathu.*
Ditto ...	... နေမျိုးရာဇာ။ *Nemyo-yaza.*
သံတိုက်စိုး *Thantaikso* ...	... နေမျိုးစည်သူရာဇာ။ *Nemyo-sithu-yaza.*
Ditto ...	... နေမျိုးသီရိစည်သူ။ *Nemyo-thiri-sithu.*

III.—*She-Yôn Police Court.*

မြို့ဝန်မြို့သာမြို့စား *Myowun-myotha Myoza*	... မင်းကြီးမဟာမင်းခေါင်သူရိန်။ *Mingyi Maha-minhkaung-thurein.*
မြို့ဝန်။နတ်ရှင်ရွေးဘို *Myowun-natshin-ywebo*	... မင်းကြီးမဟာမင်းလှသူရိန်။ *Mingyi Maha-minhla-thurein.*
မြို့ဝန်။စုံးမြို့စား *Myowun-sôn Myoza*	... မင်းကြီးသီရိဇေယဂါမဏိ။ *Mingyi Thiri-zeya-gamani.*
အရှေ့ပြင်ထောင်မှူး *Ashe-pyin Htaunghmu*	... မင်းတင်သီရိရာဇာ။ *Mintin-thiri-yaza.*
တောင်ပြင်ထောင်မှူး *Taung-pyin Htaunghmu*	... မင်းလှသီရိကျော်စွာ။ *Minhla-thiri-kyawswa.*

မြောက်ပြင်ထောင်မှူး ... *Myauk-pyin Htaunghmu* ...	... မင်းကျော်သီရိဇေယသူ။ ... *Minkyaw-thiri-zeyathu.*
အနောက်ပြင်ထောင်မှူး ... *Anauk-pyin Htaunghmu* ...	... မင်းခေါင်သီရိသင်္ခယာ။ ... *Minhkaung-thiri-thinhkaya.*
မြို့စာရေး ... *Myosaye* ...	... မင်းလှစည်သူကျော်။ ... *Minhla-sithukyaw.*
Ditto ...	... { မင်းထင်ရာဇသူ။ *Mintin-yazathu.*
Ditto ...	... { နေမျိုးဇဝနကျော်ထင်။ *Nemyo-zewana-kyawtin.*
Ditto ...	... { နေမျိုးမင်းခေါင်သူရိန်။ *Nemyo-minhkaung-thurein.*
ရွှေပြည်စိုး ... *Shwepyi-so* ...	... နေမျိုးဇေတရာဇာ။ ... *Nemyo-zeta-yaza.*

V.—*Anauk-Yôn, Women's Courts.*

အနောက်ဝန် ... *Anaukwun* ...	... မင်းကြီးအာယုဒီဃကျော်။ ... *Mingyi Ayadighakyaw.*
Ditto ...	... { မင်းကြီးမဟာတရာပျား။ *Mingyi Maha-tayapya.*
Ditto ...	... { မဟာမင်းလှမင်းထင်သီရိ။ *Maha-minhla-mintin-thiri.*
Ditto ...	... { မဟာမင်းလှသီရိရာဇာ။ *Maha-minhla-thiri-yaza.*
Ditto ...	... { မဟာမင်းလှမင်းထင်ရာဇာ။ *Maha-minhla-mintin-yaza.*
အနောက်ဝန်စာရေး ... *Anaukwunsaye* ...	... နေမျိုးရာဇကျော်ခေါင်။ ... *Nemyo-yaza-kyawhkaung.*
Ditto ...	... { နေမျိုးသီရိတံဆောင်။ *Nemyo-thiri-tasaung.*
Ditto ...	... { နေမျိုးဘယရွှေတောင်။ *Nemyo-baya-shwetaung.*
Ditto ...	... { နေမျိုးသီဟရာဇာ။ *Nemyo-thiha-yaza.*
Ditto ...	... { နေမျိုးနယစည်သူ။ *Nemyo-naya-sithu.*
ကတော်စာရေး ... *Kadawsaye* ...	... နေမျိုးသီဟကျော်ထင်။ ... *Nemyo-thiha-kyawtin.*
Ditto ...	.. { နေမျိုးဗလသိဒ္ဓိ။ *Nemyo-bala-theiddi.*
Ditto ...	... { နေမျိုးသီဟကျော်စွာ။ *Nemyo-thiha-kyawswa.*
Ditto ...	... { နေမျိုးသိဒ္ဓိရန်နိုင်။ *Nemyo-theiddi-rannaing.*

Kadawsaye ... ... { နေမျိုးသီရိရာဇာ။ *Nemyo-thiri-yaza.*

The nominal salaries of the Ministers and officials of the Courts were monthly—

	Rs.		Rs.
Wungyis	1,000	*Ahmadawya*	50
Myinsugyi-wun	500	*Aweyauk*	50
Athi-wun	500	*Thandawhkan*	50
Wundauk	500	*Letsaungsaye*	50
Nāhkandaw	100	*Athisaye*	50
Sayedawgyi	100	*Letsaungyôntaiksu* ...	50
Ameindawya	50	*Kathôn myaung-taik-so* ...	50
Athônsaye	50	*Neya-cha Thwethaukgyi* ...	30

BYÈTAIK.

	Rs.		Rs.
Atwinwun	660	*Byè-taik thansin*	100
Thandawsin	200		

POLICE COURT.

	Rs.		Rs.
Myowun	500	*Htaungsachi*	50
Htaunghmu	200	*Myotagābo*	30
Myosaye	100	*Myo-tagāhmu*	25

WOMEN'S COURT.

	Rs.		Rs.
Anauk-wun	300	*Anauk-yôn-saye*	30
Anauk-wun-saye	50	*Anauk-taga-hmu*	30
Kadaw-saye	30		

CIVIL COURT.

	Rs.		Rs.
Tayā thugyi	300	*Taya-saye*	50
Tayā Nā-hkan	50	*Hkunboteing*	50

The late Mr. R. H. Pilcher, in a paper read before the Simla Institution, says:—

"Judicial business in the *Hlut* is, on occasion, transacted with great solemnity. When the Crown Prince, or any other member of the Royal Family presides, the suitors, or their advocates, are alone allowed to appear in the first instance, the general public being excluded. Both parties must be suitably dressed, and before they appear they are given long loose white coats to wear, and caps, of which the plaintiff's is green and the defendant's is red. These are provided at the public expense and are kept at the Courts. They are usually worn merely by the advocates for the parties. The members of the Council themselves never appear without their proper uniform, a fillet of white muslin round the head and a loose muslin gown over a tight-fitting white cotton coat. The analogy between the coats and caps and a barrister's gown and wig scarcely needs to be suggested.

"The *Myowuns*, or district officers, practically exercise full civil and criminal jurisdiction in all ordinary suits. Appeals in criminal cases, though under certain circumstances they are allowed, are said to be especially rare. Punishments are inflicted at the discretion of the judge, there being no Penal Code. In most instances the offender can get off with a fine, or at least a money payment. Sometimes again, when crime

has been so rife as to attract special attention, punishments more cruel than ordinary are awarded. If, as sometimes happens, a district officer has been unusually severe and is called to account, he can generally excuse himself on the ground that 'his hand reached further than he intended,' that is to say, that he acted hastily, his zeal carried him away.

"Of Burmese ideas about the administration of civil justice, I had a good opportunity of learning something during my stay at Mandalay, for I then sat once a week or so with a Burmese judge in the mixed Court. The character of judges for impartiality is not held in such esteem amongst the Burmese as amongst ourselves. And, though they use the Laws of Manu to some extent as a Civil Code, their procedure is of course of their own making. Hence it is not surprising that, in deciding civil suits, the principal aim of the judge is, if possible, to satisfy both parties, the result being in almost all cases a compromise; and that ordeal is a recognized mode of determining disputes. I may here remark that oaths are not used as in our Courts on ordinary occasions. They are regarded as a kind of ordeal in themselves, and are only taken in the last resort by one of the parties on the agreement of the other to be bound by the result. The oath is taken with great solemnity before the altar, and a sort of festival is held on the occasion, the parties and their friends going, with a band, in holiday attire to the temple.

"The Burmese say there are six classes of judges. First, there are the parties themselves who may agree together to some decision of their cause. Secondly, they may appoint one or more arbitrators of their own. Thirdly, there is the unpaid but officially appointed and recognized arbitrator, whose Court is termed *Hkön*. Above this are the Court of the district officer, then the Chief Civil Court at the capital, and finally the King, whose authority is mostly exercised through the *Hlut*.

"The commencement of a suit in Court is by the presentation of a written plaint, on which the judge commonly orders an assistant, called *nahkan*, the listener, to enquire into the case and report. The *nahkan* examines the parties and, perhaps, their witnesses, and presents his report. With this the parties submit their pleadings, that is to say, full statements of cause of action and reply or defence. A day is then appointed for hearing, advocates are chosen, and the case is heard. After the necessary examination of the parties and their witnesses, issues are fixed by the judge, who at the same time declares on whom the burden of proof lies. Thus the order runs 'let the plaintiff prove so and so' and 'let the defendant, if he can, prove so and so.' Witnesses are examined after this, and judgment is given. If the parties agree to abide by the judgment, they both eat tea, and the judgment thus becomes final. If they do not so agree, they may appeal to a higher grade of Court. Sometimes, if the worsted party is considered unreasonable and contumacious, he is imprisoned for a time to compel him to 'eat tea' and accept the Court's decision. The oath-ordeal is often proposed by one of the parties themselves. The Burmese are a very religious people and regard an oath with some dread. They are not litigious or quarrelsome. And thus A often says: 'If B will swear to his version of the story, I will be satisfied.'

"There are three other forms of ordeal. In one, two candles, one for each party, of equal size, and with equally thick wicks, are solemnly burnt

on an altar in a temple, the deity having been first invoked, and that party is worsted whose candle goes out first. In another, each man's forefinger is wrapped round with feathers so as to leave the tip exposed. The forefingers are plunged in molten lead, and then tied up for a few days. If one party is injured and the other is not, the former loses. If there is difficulty in deciding which is more hurt, the fingers are pricked and the flow of serum from the one finger and not from the other determines the point. The third kind of ordeal is by water. The two parties go into sufficiently deep water, and their heads are pushed down with poles. He wins who can remain under longest. It is in these days allowed to undergo this, and, I suppose, other ordeals, by deputy, a permission which seems to detract not a little from their value. But indeed they are not often resorted to. When Mr. Crawford visited Ava in 1826, however, this could hardly have been the case, for he even gives details of the various fees payable to those who assisted at the ordeals. Fees and presents were, at least in his day, so common that to take a man to Court was to inflict a grievous injury on him. And indeed, at the present day too, the word "case" or "suit" has the same significant connotation he ascribes to it."

The four kinds of trial by ordeal are called *kabba le-yat*, and are *mi-htun*, burning candles; *san-wa* chewing and swallowing rice; *ye-la*, going under water; and *hkè-htauk*, thrusting the finger in melted lead. There were many modifications of each leading idea.

The Kinwun Mingyi, C.S.I., gives the following description of the Burmese judicial system:—

(1) If both the parties to a civil suit were residents of the same place, the jurisdiction lay first of all with the local *thugyi*, whose decision was final if both parties agreed and ate *letpet*.

(2) If the parties were not both residents of the same place, or if one of the parties was dissatisfied and wished to appeal, the case was taken to the Court of the district *Myo-wun*, whose decision was final if both parties agreed and ate *letpet*.

(3) If the parties were dissatisfied with the *Myo-wun's* decision, they could appeal to the Courts at the capital called *Saing-ya* (ဆိုင်ရာ), *Wunein* (ဝန်အိမ်), *Pyin-ein* (ပြင်အိမ်), *Su-shin* (စုရှင်), and *Ngan-shin* (ငန်းရှင်), and the decision of these Courts was final if both parties agreed and ate *letpet*.

(4) If the parties were dissatisfied with the decision of any one of these five Courts, they could carry the appeal to the Civil Court *Taya-yôn*, whose decision was final if both parties agreed and ate *letpet*.

(5) If the parties were dissatisfied with the decision of the Judges of the Civil Court, they could appeal to the *Hlutdaw*. The decision of the *Mingyis* was final.

(*a*) *Letpet* was not eaten upon the decision of the *Hlutdaw* as in the lower Courts, and the decision was absolute.

(*b*) It was often the practice in the *Hlutdaw* to have the *Einshemin*, or one or two of the senior princes, appointed by desire of the King, to decide cases in consultation with the *Mingyis*.

(6) Although the decision of the *Hlutdaw* was ordinarily final, yet it was often the practice, in cases of importance regarding hereditary, territorial, and other claims, to bring the parties before the King and have their cases re-heard. For this, however, express Royal permission was necessary, given through the *Hlutdaw*; otherwise His Majesty might question the *Mingyis* who had sat as a Court of Appeal and confirm or reject their decision as he saw fit. The Royal Command was of course final.

(7) This procedure was maintained until the reign of King Mindôn.

(8) During the reign of King Mintayagyi (as he is most frequently called by the Burmese, especially by *ex*-officials) the founder of the city of Mandalay, among other special changes, the jurisdiction of the *Saing-ya*, *Wun-ein*, *Pyin-ein*, *Su-shin*, and *Ngan-shin* Courts was entirely withdrawn and abolished.

(9) Moreover, it was often the practice to suspend the jurisdiction of the district *Wuns* and *Myothugyis* and to appoint a *Hkôn*, called a *Hkôn-daw* when appointed by the king, to each District Court, to exercise the functions of judge and decide cases. The same practice was also followed in the four suburbs of the capital.

(10) The decision of such *Hkôns* was final when both the parties agreed and ate *letpet*. When the parties were dissatisfied and refused to eat *letpet* an appeal lay to the Civil Court and thence as noted in paragraphs (4) to (6) above.

(11) Among the alterations made during King Thibaw's reign was the abolition of the office of *Hkôn*. Instead of these a series of Civil Courts was constituted with respect to grades, powers, jurisdiction, value of suits, appeals, and so on, as shown in the tabular statement appended :—

Name of Court.	Title of Judge.	Jurisdiction.	Value of appealable cases.	To what Court appeal lay.
Thugyi's Court ...	Thugyi	All suits not exceeding Rs. 500 in value.	All suits exceeding Rs. 20 in value.	District *Wun's* Court.
District *Wun's* Court ...	District *Wun* (*A-we Myo-wun*).	All suits not exceeding Rs. 1,000 in value.	ditto ...	Divisional *Wun's* Court.
Divisional *Wun's* Court	Divisional *Wun* (*Hkayaing Wun*).	ditto ...	ditto ...	Civil Court.
Civil Court	Civil Judge (*Taya thugyi*).	All suits without limit of value.	All suits over Rs. 1,000 in value.	Judicial Commissioner's Court.
Judicial Commissioner's Court.	Judicial Commissioner (*Taya Htana Chôk*).	ditto ...	All suits over Rs. 5,000 in value.	Council of Ministers' Court.
Council of Ministers' Court	Ministers in Council (*A-si A-we Win-hmu-daw Mat-daw*).	ditto ...	ditto ...	Royal *Hlut*
Royal *Hlut*	*Mingyis* (*Wun-shin-daw Mingyi*).	ditto ...	ditto ...	The Royal Chamber.
The Royal Chamber (*Min èkayit she-daw thwin*).	His Majesty the King ...	ditto ...	ditto ...	No appeal.

Besides these Courts appointed by authority there were, however, private persons who decided cases without any appointment by Government. Such were—

(1) *Anunyata hkôn*, arbitrators mutually chosen by the parties to their particular suit. Consent was expressed by an agreement in writing to refer the matter to arbitration for final determination, and by eating *letpet*.

(2) *Hnyi hkôn*, persons learned in the law, to whom reference was made either by order of the Court, or by consent of the parties. They seem to have been peculiar to the province.

(3) *Lugyis*, or elders of the place of residence of both parties.

(4) One party to the suit might decide the case, if the other party specially left the settlement to him.

The decision of the *anunyata hkôn* was final whether the parties ate *letpet* after it or not, because they had already eaten *letpet* at the time of the execution of the written agreement.

The other three modes of settlement were on the same footing as that of the mutually chosen arbitrator, provided that there had been a written reference to arbitration, accompanied by the eating of salad tea. But if the parties did not agree and eat the salad tea, they were at liberty to appeal to the Courts in the ordinary way.

It would be a mistake, however, to suppose that there were any specially qualified legal officers under Burmese rule. There was no such differentiation of functions and division of labour among the Burmese, even in Mandalay, as there is among European nations. Just as the ordinary Burmese peasant cultivates his fields, catches fish, weaves his clothes, shapes his dugout, and builds his own house, so the Burmese official was concerned not only with politics, revenue and finance, but decided criminal and civil suits of importance, and might be called on to direct military operations, to take the field in person, build a pagoda, or dig an irrigation canal, with perhaps no qualifications for any single one of these duties. The most intelligent and active officers connected with the law courts were usually the *she-ne*, or pleaders. They went through no special qualifying course, but they were usually tolerably well acquainted with the laws and with judicial forms, and they took trouble with cases entrusted to them, which most of the officials on the bench did not.

The written Code, civil and penal, though severe, was on the whole wise and good, but it was little more than a dead-letter. Rulers from the highest to the lowest decided cases according to

their own judgment, or more frequently according to their own interest. The best of them seldom got beyond the judicial methods of King Solomon. The punishments were cruel and severe. The lowest in the scale was imprisonment in fetters. The prisons were miserable places in point of accommodation and as insecure as they were insanitary. Their insecurity gave rise to the necessity of every prisoner being put in the stocks. Fetters varied, according to circumstances, from one pair up to nine. No definite term of imprisonment was specified. A man simply went to gaol and stayed there ordinarily till no more could be got out of him and his friends. Food had to be provided for him by his relations. If he had none, he had to beg for his bread and was allowed to clank about the streets in his irons for the purpose. Other punishments were confiscation, flogging, mutilation, perpetual slavery at the pagodas, and various forms of death, more or less cruel. Decapitation was the most common, and crucifixion was the usual punishment for dacoits. They were, however, usually killed before they were tied up, or immediately afterwards. Money, however, would expiate any offence, except treason and sacrilege. The incorrigible, when no longer able to pay fines, were tattooed with a circle on the cheek (the *pa·gwet*), or the name of the offence was tattooed on the breast. Persons thus marked were deprived of all civil rights and became dead in law. In important trials torture was applied to both principals and witnesses, and the gaolers frequently had recourse to modified forms of it for the purpose of extorting money from their prisoners.

The chief officials outside of the *Hlut-daw nga yet*, whose offices and duties lay in Mandalay, were the following:—

Nammadaw-wun, the Officer in charge of the Chief Queen's Apartments and Affairs generally.

Shwetaik-wun, the Officer in charge of the Treasury.

Kyi-wun, the Officer in charge of the Royal Granaries.

Thuyè-wun, the Commandant of the *Thuyè* Regiment, the Royal Body-guard.

Sin-wun, the Officer in charge of the Royal Elephants.

Kala-wun, the Minister for the Affairs of Aliens and Foreigners.

Ahkôn-wun, the Commissioner of Taxes and Revenue.

Akauk-wun, the Commissioner of Excise, Collector of Customs.

Daing-wun, the Commandant of the *Daing* Regiment.

Si-daw-myin-wun, the Master of the Royal Liveries.

Kaunghan-wun, the Commandant of the *Kaunghan* Regiment.

Amyauk-wun, the Director of Ordnance Commanding the Royal Artillery.

Lamaing-wun, the Commandant of the *Lamaing* Regiment.

Hpaung-wun, the Admiral of the Fleet, in charge of the Royal Boats and Barges.

Lè-wun, the Minister of Agriculture, in charge of the Royal Lands.

Kinwun, the Castellan, Warder of the Guard-stations.

Mye-nan-wun, the Warden of the Palace or Seneschal.

Să-daw-wun, the Chief Manciple, or Almoner.

Thitdaw-wun, the Conservator of Forests.

Ekkabat-myin-wun, the Colonel of the *Ekkabat* Cavalry Regiment.

Mingala-myin-wun, the Colonel of the *Mingala* Horse.

Naukdawpa-myin-wun, the Colonel of the *Naukdawpa* Dragoons.

Myin-thit-myin-wun, the Colonel of the *Myinthit* Regiment of Cavalry.

Kathè-myin-wun, the Colonel of the Kathè or Manipur Horse.

Sin-byu-wun, the Warden of the White Elephant.

Sanetpală-wun, the Commandant of the Elephantery, the war elephants.

Auk-ma-wun, the Officer in charge of the Cow-elephants.

Shwe-pyi-wun, the Commandant of the *Shwe-pyi* Regiment.

Shwenanyo-lamaing-wun, the Master of the *Lamaings,* the serfs who cultivated the Royal lands.

De-wun Akauk-wun, the Collector of Customs for Goods arriving from China through Bhamo.

Yôn-su-wun, the Commandant of the *Yôn-su* Regiment.

Ta-yôk-wun, the Superintendent in charge of Chinese Affairs.

Yodaya-wun, the Superintendent in charge of Siamese Affairs.

Kathè-wun, the Superintendent in charge of Manipuri Affairs.

Amwe-wun, the President of the Probate Court.

Pan-gyet-wun, the Manager of the Glass Factories.

Than-gyet-wun, the Master of the Foundries and Forges.

Awe-kyi-wun, the Superintendent of the Granaries for storing grain from distant parts.

Achôk-wun, the Master Tailor.

Set-wun, the Director of the Royal Machinery Works.

Let-net-taik-wun, the Director of the Arsenal.

Pabè-wun, the Director of the Blacksmiths.

Padein-wun, the Governor of the Goldsmiths.
Nankachi-wun, the Director of Telegraphs.
Mahadan-wun, the Ecclesiastical Commissioner.
Wut-mye-wun, the Commissioner of Sacred Lands.
Ye-kyi-wun, the Director of the Water-works.
Nauk-win-kyin-wun, the Governor of the Women's Prison.
Yè-hle-wun, the Admiral of the War-boats.
Ôk-wun, the Master of the Brickfields.
Ayòt-wun, the Inspector-General of Hospitals, in charge of those afflicted with unclean or infectious diseases.
Kyôn-wun, the Officer in charge of the Royal Moat.
Bitagat-wun, the Minister of Public Instruction.

The following *Bo*, or Military Officers, were in daily and nightly attendance on the King, according to a permanent muster-roll:—

Myaukdawè Bo, the Colonel of the *Myaukdawè* Regiment.
Taungdawè Bo, the Colonel of the *Taungdawè* Regiment.
Myauktayā-ngāsè Bo, the Commandant of the Northern Company of 150.
Taungtayā-ngāsè Bo, the Commandant of the Southern Company of 150.
Myaukmayapin Bo, the Commandant of the *Myaukmayapin* Levy.
Taungmayapin Bo, the Commandant of the *Taungmayapin* Levy.
Shwe-pyihmankin Bo, the Commandant of the *Shwe-pyihmankin* Battalion.
Nat-su-let-wè Bo, the Commandant of the Left Battalion of the *Nat-su* Regiment.
Nat-su-let-ya Bo, the Commandant of the Right Battalion of the *Nat-su* Regiment.
Ywe-let-wè Bo, the Commandant of the Left Wing of the *Ywe* Regiment.
Ywe-let-ya Bo, the Commandant of the Right Wing of the *Ywe* Regiment.
Let-wè-gyaung Bo, the Commandant of the *Let-wè-gyaung*.
Let-ya-gyaung Bo, the Commandant of the *Let-ya-gyaung*.
Bôn-daw-pyit Bo, the Colonel of the *Bôn-daw-pyit* Regiment.
Nat-shin-ywe Bo, the Colonel of the *Nat-shin-ywe* Regiment.
Shwe-hlan Bo, the Colonel of the *Shwe-hlan* Regiment.
Kinda Bo, the Colonel of the *Kinda* Regiment.
Linzin Bo, the Colonel of the *Linzin* Regiment.
Taga-ni Bo, the Commandant of the Guard of the Red Gate.
Shan Bo, the Colonel of the Shan Regiment.

Amyauk Bo, the Colonel of the Battery of Artillery.
Bôn-daw-to Bo, the Colonel of the *Bôn-daw-to* Regiment.

There where twelve officers of the *Win-Yôn* in charge of the city gates, with a *Win* battalion attached to each gate—north, south, east, and west—four *Win-daw-hmu* commanding the battalions, four *Win-sa-chi,* their Lieutenants, and four *daing-saye,* their clerks.

OFFICERS OF THE TREASURY.

One *Shwe-taik-wun,* the Chancellor of the Exchequer.
Four *Shwe-taik-so,* Treasurers.
Four *Shwe-taik-kyat,* Assistant Treasurers.
Four *Shwe-taik-saye,* Clerks of the Treasury.
One *Thaw-gaing,* Turnkey or door-keeper.

The *Shwe-taik* was not merely the Treasury, but was also the depository of the archives of State. Here were kept records of all kinds, genealogies of hereditary officials, lists of the king's artificers, revenue returns, and many other documents. The king's artificers were hereditary servants, and the heads of their families were accounted officers of the *Shwe-taik.* The spoliation of the treasury and the scattering of all the records on the night of the occupation of Mandalay by the Upper Burma expeditionary force in November 1885 is a matter for permanent regret. Subjoined is a list of the abovenamed officials and officers maintained in King Mindôn's time, with their titles.

နန်းမတော်ဝန် ...	... မဟာသီရိဇေယသူ။
Nam-madaw Wun	... *Maha-thiri-zeyathu.*
ရွှေတိုက်ဝန် ...	... မင်းကြီးမဟာသက်တော်ရှည်။
Shwe-taik Wun ...	... *Mingyi Maha-thetdawshe.*
ကျီဝန် ...	... မဟာမင်းလှကျော်တင်။
Kyi Wun ...	... *Maha-minhla-kyawtin.*
သူရဲဝန် ...	... မဟာမင်းတင်သမိန်ဇက်။
Thuyè Wun ...	... *Maha-mintin-thameinzat.*
ဆင်ဝန် ...	... မင်းရဲဇေယကျော်တင်။
Sin Wun ...	... *Minyè-zeya-kyawtin.*
ကုလားဝန် ...	... မဟာသီရိဂုဏ္ဏကျော်သူ။
Kala Wun ...	... *Maha-thiri-gônna-kyawthu.*
အခွန်ဝန် ...	... မဟာဘောဂရာဇကျော်ထင်။
Akun Wun ...	... *Maha-bawga-raza-kyawtin.*
အကောက်ဝန် ...	...}
Akauk Wun ...	...} ......
ဒိုင်းဝန် ...	... မဟာမင်းလှသင်္ခယာ။
Daing Wun ...	... *Maha-minhla-thinhkaya.*

စီးတော်မြင်းဝန် ...	... မင်းလှမင်းကျော်ရာဇာ။
Sidawmyin Wun ...	... *Minhla-minkyaw-raza.*
ကောင်ဟံဝန် ...	... မဟာမင်းထင်စည်သူ။
Kaunghan Wun ...	... *Maha-mintin-sithu.*
လမိုင်းဝန် ...	... မဟာမင်းထင်ရာဇာ။
Lamaing Wun ...	... *Maha-mintin-raza.*
အမြောက်ဝန် ...	... မဟာမင်းထင်နော်ရထာ။
Amyauk Wun ...	... *Maha-mintin-nawrahta.*
ဘောင်ဝန် ...	... မဟာမင်းစည်သူ။
Baung Wun ...	... *Maha-minhla-sithu.*
လယ်ဝန် ...	... မဟာမင်းလှစည်သူ။
Lè Wun ...	... *Maha-minhla-sithu.*
အဂ္ဂပမြင်းဝန် ...	... မင်းလှမင်းကျော်။
Ekkabat-myin Wun	... *Minhla-minkyaw.*
စားတော်ဝန် ...	... မဟာသီရိရွှေတောင်။
Sā-daw Wun ...	... *Maha-thiri-shwetaung.*
ယွန်းစုဝန် ...	... မင်းလှမင်းကျော်သင်္ခယာ။
Yun-su Wun ...	... *Minhla-minkyaw-thinhkaya.*
သစ်တော်ဝန် ...	... မင်းကျော်သိဒ္ဓဗိသေပညာ။
Thit-daw Wun ...	... *Minkyaw-theitta-bithe-pinya.*
ရွှေနန်းရိုးလမိုင်းဝန် ...	... မဟာသီရိကျော်ထင်။
Shwenanyo Lamaing Wun	... *Maha-thiri-kyawtin.*
ဒေးဝန်းအကောက်ဝန် ...	... မင်းလှမင်းထင်စည်သူ။
Dewun Akauk Wun	... *Minhla-mintin-sithu.*
ဆင်မြင်းဝန် ...	... မင်းထင်ရာဇကျော်ခေါင်။
Sin-min Wun ...	... *Mintin-raza-kyawhkaung.*
မြေနန်းဝန် ...	... မဟာမင်းထင်စည်သူ။
Myenan Wun ...	... *Maha-mintin-sithu.*
ကင်းဝန် ...	... မဟာမင်းလှဇေယျသူ။
Kin Wun ...	... *Maha-minhla-zeyathu.*
ဓနက်ပလာဝန် ...	... မင်းကျော်ပြာရှတ်။
Dhanatpala Wun...	... *Minkyaw-pyashat.*
အောက်မဝန် ...	... မင်းထင်မင်းလှရာဇာ။
Aukma Wun ...	... *Mintin-minhla-raza.*
မင်္ဂလာမြင်းဝန် ...	... မဟာမင်းထင်ဇေယျသူ။
Mingala-myin Wun	... *Maha-mintin-zeyathu.*
နောက်တော်ပါမြင်းဝန် ...	... မဟာမင်းကျော်သင်္ခယာ။
Nauk-dawpa-myin Wun	... *Maha-minkyaw-thinhkaya.*
မြင်းသစ်မြင်းဝန် ...	... မဟာမင်းလှကျော်သူ။
Myinthit-myin Wun	... *Maha-minhla-kyawthu.*
ကသည်းမြင်းဝန် ...	... မင်းထင်ရာဇာ။
Kathi-myin Wun...	... *Mintin-raza.*
အမွေဝန် ...	... မင်းထင်သင်္ခရန်အောင်။
Amwe Wun ...	... *Mintin-thinhka-ranaung.*

အချုပ်ဝန်	မင်းထင်သီဟရာဇာ။
Achôk Wun	*Mintin-thiha-raza.*
တလုပ်ဝန်	မင်းလှမင်းထင်ရာဇာ။
Talôk Wun	*Minhla-mintin-raza.*
ယိုးဒယားဝန်	မင်းတင်မင်းခေါင်။
Yotaya Wun	*Mintin-minhkaung.*
ပန်းထိမ်ဝန်	မင်းထင်စည်သူ။
Pantin Wun	*Mintin-sithu.*
ဘဏ်ချက်ဝန်	မဟာဇေယနန္ဒကျော်ထင်။
Banchet Wun	*Maha-zeya-nanta-kyawtin.*
သံချက်ဝန်	မင်းကျော်သီရိရာဇာ။
Thangyet Wun	*Minkyaw-thiri-raza.*
အဝေးကျီဝန်	မဟာနန္ဒသင်္ကြံ။
Awe-kyi Wun	*Maha-nanta-tinkyan.*
စက်ဝန် ... ... }	......
Set Wun ... ... }	
လက်နက်တိုက်ဝန်	မင်းလှသိင်္ခကျော်စွာ။
Letnet-taik Wun	*Minhla-thinhka-kyawswa.*
ပန်းဘဲဝန်	မဟာမင်းခေါင်ပညာသိဒ္ဓိကျော်ထင်။
Pabè Wun	*Maha-minhkaung-panya-theid-di-kyawtin.*
နန်းကကျေးဝန်	မင်းလှမင်းထင်။
Nankeikkaw Wun	*Minhla-mintin.*
မဟာဒါန်ဝန်	မင်းထင်သီရိစည်သူ။
Mahadan Wun	*Mintin-thiri-sithu.*
ဝတ်မြေဝန်	မင်းလှနရကျော်ခေါင်။
Wut-mye Wun	*Minhla-nara-kyawhkaung.*
ရေကြည့်ဝန်	မင်းလှသီရိကျော်ခေါင်။
Ye-kyi Wun	*Minhla-thiri-kyawhkaung.*
နောက်ဝင်းချင်ဝန်	မင်းထင်မင်းလှစည်သူ။
Naukwin-gyin Wun ...	*Mintin-minhla-sithu.*
ရဲလှေဝန်	နေမျိုးမင်းလှမဟာသမွန်။
Yè-hle Wun	*Nemyo-minhla-maha-thamôn.*
ငွေခွန်ဝန်	မဟာမင်းလှသင်္ခယာ။
Ngwehkun Wun	*Maha-minhla-thinhkaya.*
ပုဏ္ဏားဝန်	မင်းလှမင်းထင်ရာဇာ။
Pônna Wun	*Minhla-mintin-raza.*
ကျုံးဝန်	မင်းလှသီရိသင်္ခယာ။
Kyôn Wun	*Minhla-thiri-thinhkaya.*
အုတ်ဝန်	မင်းလှသီရိကျော်ထင်။
Ok Wun	*Minhla-thiri-kyawtin.*
ကသည်းဝန်	နေမျိုးနာဂရှန္တကျော်ခေါင်။
Kathi Wun	*Nemyo-nagashanta-kyawhk-aung.*

အရွတ်ဝန်	မင်းလှသီရိရာဇာ။
Ayôk Wun	*Minhla-thiri-raza.*
အရှေ့ဝင်းမှူး	မင်းကြီးမဟာသမိန်တော်ပြတ်စ။
Ashe-Winhmu	*Mingyi Maha-thameindaw-pyatsa.*
တောင်ဝင်းမှူး	မင်းကြီးမဟာမင်းလှမင်းခေါင်။
Taung Winhmu	*Mingyi Maha-minhla-minhkaung.*
မြောက်ဝင်းမှူး	မင်းကြီးမဟာမင်းခေါင်ဇေယသူ။
Myauk Winhmu	*Mingyi Maha-minhkaung-zeyathu.*
အနောက်ဝင်းမှူး	မင်းကြီးမင်းလှမင်းခေါင်။
Anauk Winhmu	*Mingyi Minhla-minhkaung.*
မြောက်ဒဝယ်ဗိုလ်	မဟာမင်းခေါင်သီဟသူ။
Myauk-dawè Bo	*Maha-minhkaung-thihathu.*
တောင်ဒဝယ်ဗိုလ်	မဟာမင်းလှကျော်ခေါင်။
Taung-dawè Bo	*Maha-minhla-kyawhkaung.*
မြောက်တရာ့ငါးဆယ်ဗိုလ်	မင်းထင်ရန်အောင်။
Myauk-taya-ngasè Bo	*Mintin-ranaung.*
တောင်တရာ့ငါးဆယ်ဗိုလ်	မင်းထင်ကျော်ထင်။
Taung-taya-ngasè Bo	*Mintin-kyawtin.*
မြောက်မာရပင်ဗိုလ်	မဟာမင်းလှတံဆောင်။
Myauk-mayapin Bo	*Maha-minhla-tasaung.*
တောင်မာရပင်ဗိုလ်	မင်းထင်သူရရဲခေါင်။
Taung-mayapin Bo	*Mintin-thura-yèhkaung.*
ရွှေပြည်မှန်ကင်းဗိုလ်	မင်းလှသီရိတံဆောင်။
Shwe-pyi-hman-kin Bo	*Minhla-thiri-tasauug.*
နတ်စုလက်ဝဲဗိုလ်	မဟာဒေဝတံဆောင်။
Natsu-letwè Bo	*Maha-dewa-tasaung.*
နတ်စုလက်ယာဗိုလ်	မဟာဒေဝမင်းခေါင်။
Natsu-letya Bo	*Maha-dewa-minhkaung.*
ရွေးလက်ဝဲဗိုလ်	မဟာမင်းထင်သမိန်စက်။
Ywe-letwè Bo	*Maha-mintin-thameinsat.*
ရွေးလက်ယာဗိုလ်	မင်းထင်မင်းခေါင်။
Ywe-letya Bo	*Mintin-minhkaung.*
လက်ဝဲကြောင်းဗိုလ်	မင်းလှသီရိကျော်သူ။
Letwè-gyaung Bo	*Minhla-thiri-kyawthu.*
လက်ယာကြောင်းဗိုလ်	မဟာမင်းထင်တံဆောင်။
Letya-gyaung Bo	*Maha-mintin-tasaung.*
ရွှေလှံဗိုလ်	မဟာမင်းလှကျော်သူ။
Shwehlan Bo	*Maha-minhla-kyawthu.*
နတ်ရှင်ရွေးဗိုလ်	မဟာမင်းလှမင်းခေါင်။
Natshinywe Bo	*Maha-minhla-minhkaung.*

ရွှေပြည်ဗိုလ် *Shwepyi Bo* ...	... မင်းတင်သီရိတံဆောင်။ *Mintin-thiri-tasaung.*
တံခါးနီဗိုလ် *Taga-ni Bo* ...	... မင်းတင်သူရိန်။ *Mintin-thurein.*
ကင်းတားဗိုလ် *Kinda Bo* ...	... မင်းတင်သူရရဲခေါင်။ *Mintin-thuya-yèhkaung.*
ဘုန်းတော်ပြစ်ဗိုလ် *Bôn-daw-pyit Bo* ...	... မင်းတင်သိဒ္ဓိရန်အောင်။ *Mintin-theiddi-ranaung.*
လင်းဇင်းဗိုလ် *Linzin Bo* ...	... မင်းလှသီရိကျော်တင်။ *Minhla-thiri-kyawtin.*
ဘုန်းတော်တိုးဗိုလ် *Bôn-daw-to Bo* ...	... မင်းလှသိဒ္ဓိဗလကျော်ထင်။ *Minhla-theiddi-bala-kyawtin.*
ရှမ်းဗိုလ် *Shan Bo* ...	... မင်းထင်သူရရဲခေါင်။ *Mintin-thuya-yèhkaung.*
အမြောက်ဗိုလ် *Amyauk Bo* ...	... မင်လှသီရိကျော်တင်။ *Minhla-thiri-kyawtin.*

The following retainers constituted the *Royal suite* and were on duty day and night in regular relays, under the orders of the Court Chamberlain :—

Thirty-five *Let-thōn-daw*, occupying a position similar to that of an *aide-de-camp's* combined with a page. They carried the royal weapons and emblems in State processions.

Forty *Let-hpet-yedaw*, Pages of the tea-table, usually the sons of high officials, as were in fact all the Royal retinue.

Sixty *Kōn-ya-daw*, Bearers of the Royal betel-box and the accompanying and subservient utensils.

One Hundred *Panat-daw*, Royal slipper-bearers. Many of the highest officials began service in this capacity.

Forty *Hti-byu-daw*, Bearers of the Royal White Umbrellas.

Ten *Sā-daw-pat*, Lectors, men chosen for their elocution to read religious books aloud before the King.

Fifteen *Asaung-daw-mya*, Grooms of the Chamber, many of them *ex*-officials and of greater age and responsibility than the *let-thôn-daw*. They carried verbal or other messages.

Thirty *Let-swè-daw-gyi*, Yeomen of the Guard, Gentlemen-at-arms, who carried guns and other arms in processions before the King.

Fifty *Let-swè-daw-ngè*, the same.

Eighty *Mingala-let-swè*, the same.

Seventy *Nga-bōn-taik-let-swè*, the same.

Fifty *Palaing-let-swè*, the same.
Fifty *Myauk-samôt-let-swè*, the same.
Forty *Taung-samôt-let-swè*, the same.
Forty *Kyo-ma-gyi-let-swè*, the same.
Forty *Lesè-ngasè-let-swè*, the same.
One hundred *Kôn-hkan Bo*, Bearers of the Royal swords in State processions.
One hundred and twenty *Shwe-da-swè Bo*, Bearers of the Royal swords in State processions.
One hundred and twenty-five *Nat-shin-yan-naing*, Beef-eaters, a company of men chosen especially for their height, to wait about the palace, armed with swords and wands. Their duties were a mixture of those of a chamberlain and a policeman.
Thirty *Yè-myein*, a similar body, chosen especially for their bravery as a backbone to the *Nat-shin-yan-naing*. These latter two classes of retainers were peculiar to King Mindôn's Court.

There were twelve gates of the city and in charge of each was a *Taga Bo*, a warder or turnkey. Except on the southern side, as a rule only one of the gates on each side, that opposite the bridges over the moat, was used. These gates were—

On the eastern side	The Lôn-kè gate. The U-teik gate. The Thôn-nyut gate.
On the southern side	The Kyun-lôn gate. The Kyaw-mo gate. The Yan-ni gate.
On the western side	The Kyi-hmôn gate. The Si-shi gate. The Htin-sha gate.
On the northern side	The Si-tha gate. The Le-thin gate. The Maung-u gate.

The main gates, especially on the north and south side, were often called the Alawi gates.

Appointments.

Appointments of officials of note were always made by the King by verbal order given in durbar, through the *Than-dawzins* or heralds, from whom the order was conveyed by *Na-hkans* to the *Hlutdaw-sayes*, who made out a written order for the person appointed.

*Thugyi*ships and other minor posts were in the gift of the *Atwin-wuns*, who levied a charge, sometimes as much as two thousand

rupees, for an appointment, and when royal appointment orders issued the *Na-hkans* and *Hlutdaw* clerks received gratuities proportionately to the influence at Court of the person appointed, less for greater and more for less influence.

Ameindaws or patents of one line were more valued than those of two lines; none were ever issued in more than two lines. All offices had to be paid for in proportion to their lucrativeness, and all superiors had to be gratified in proportion to their rank.

The following seems to have been the general rule as to appointments:—

Myothugyis and *Ywathugyis* were appointed by the King. *Ywa-ôks* were appointed by the *Myowun*, or in remoter districts sometimes by the *thugyis*.

Myoôks were appointed from the *Hlutdaw* as a substitute for the *Myowun*.

Htaung-hmus and *Myosayes* were appointed by the King in the capital and in places near it; elsewhere by the *Myowun*. The former were police officers and had regular salaries.

Sitkès, *Na-hkans*, and *Myosayes* everywhere were appointed by the King. *Thugyis* were usually appointed by the *Myowun*, but the post was hereditary. *Thwethaukgyis* were both military officers and *thugyis* and were appointed by the *Myowun*. As military officers they commanded fifty men, and they were paid servants of the State, unlike the *thugyis*.

The appointment of *Myedaing* or Survey Officer lay with the *Hlutdaw*.

Taw-ges and *Taw-ôks* were appointed by the *Myo*-and *Ywa-thugyis* and were subordinates of the *Myedaing*.

The military forces of Burma were estimated in 1879 to amount to about fifteen thousand men, all told, made up as follows:—

Infantry.			North and South Wings.
"Inner" regiments	*Marahpin*	...	850 + 350 = 1,200
	Dawè	...	600 + 500 = 1,100
	Taya-ngasè	...	700 + 500 = 1,200
	Shwe-pyi-makin	...	800
	Nat-shin-ywe	...	800
		Total ...	5,100
			Right and Left Wings.
"Outer" regiments	*Gyaung*	...	600 + 700 = 1,300
	Ywe	...	550 + 650 = 1,200
	Nat-su	...	750 + 550 = 1,300
		Total ...	3,800

			Right and Left Wings.
Miscellaneous ...	*Shwe-hlan*		350
	Kin-da		350
	Shwe-pyi		400
	Thuyè		600
	Linzin		350
	Kulabyo	about	400
	Daing	"	400
	Win	"	400
	Taga-ni	"	400
	Hle *Ye-gyi,* {(Newly raised and hardly drilled.)}	"	700
	Total ...		4,350

Cavalry.

Shwe-pyi tagun	... ...	about	500
Shwe-pyi yan-aung	... ...	"	500
Ye-bet ...	... ...	"	500
Kathè ...	... ...	"	500
Other regiments	... ...	"	500
	Total		2,500

The Artillery, the *Mingala Amyauk*, was estimated, including elephant, buffalo, and light guns, moved by men, at a strength of about five hundred men.

The Army.

In 1885 we practically never came in collision with Thibaw's army. The permanent force cannot have exceeded, if it reached, these numbers. The life of every subject was at the disposal of the King, and every male was liable to serve as a soldier whenever called on, but the actual strength in any one place depended not so much on the population as on the number of men that could be fed there, and the efficiency of the force on the number of muskets available.

When soldiers were required for war the *Hlutdaw*, on the command of the King, issued orders to the Governors of provinces to provide their contingents. The *Awe-wuns* then sent out orders to the local officials. The mode of raising the levies differed in detail in almost every district, but a common method was the following. Sixteen families were grouped together to form what was called one house, and were called on to furnish two soldiers, or sometimes more. The selection of the conscripts rested with the village *thugyis*, and those selected were at liberty to provide a substitute either by paying a sum of money, or by cancelling a debt. Usually, however, the men fixed on were those unable to pay their share of the contribution raised from the people for the support of the contingent. The sixteen families had to provide their soldiers with arms and ammunition, and on leaving for service, with one basket of rice (about sixty pounds), and money at the rate of five rupees

a month for the number of months the duty was expected to last. When the ammunition became expended, the Officer Commanding the contingent collected money from the soldiery, and purchased a supply when he could, or laid hands on any he could find. Occasionally the Royal magazine at the capital sent some. Such levies were for actual service against Shans, Kachins, and Chins, or in cases of civil rebellions.

There was a standing army, that noted above, but it was almost permanently on duty in the capital. The men who composed it came from certain districts and villages traditionally supposed to supply good fighting men, and therefore exempted from taxation on condition of supplying regular contingents. Such hereditary recruiting grounds were Shwebo, Madaya, Alôn, Tabayin, Kanni, while parts of Meiktila and Myingyan, in particular, furnished cavalry troopers. The men lived in the capital when the King was there, and did duty, one half of the force at a time. The circles supplied each class of *Ahmudan* with one hundred and twenty rupees a year, and in addition to this they were supposed to receive the same from the King. In a battalion there were usually six officers, a *bo-gyi*, or Commandant, and five *bos*, Captains and Lieutenants, whose pay was two hundred rupees a month. Below these were the *Thin-thenat-ôk* or *Thwe-thauk-gyi*, in command of fifty men, who received thirty rupees a month, and the *Akyat*, who commanded ten men. These may be called non-commissioned officers. In some regiments there was a *Tat-hmu* over every two *Thwe-thauk-gyi*, who drew forty rupees a month, and over every two of them a *Thenatsaye* (who may be called an Adjutant), on one hundred a month.

The Burmese, like all the Mongolian races, recognized no essential distinction between the civil and military services. Magistrates and treasurers were expected to be as capable of handling troops as of discharging their ordinary civil duties. The under officers were equally haphazard warriors; they were usually petty traders or tattooers.

Latterly the Burmese Government made some attempt to improve the efficiency of the standing army, and both King Mindôn and King Thibaw employed European Officers, chiefly Frenchmen and Italians, to organize the army, but the success which attended their efforts was not great. In 1879 a camp of 16,000 men was established outside Mandalay and the men were exercised in elementary field manœuvres, but hardly with results that would gratify even the most indulgent of instructors. When in full dress, the infantry wore red tunics with facings of a variety of colours, red lacquered helmets with a brass plate, or a piece of looking glass, in front, and bright blue trousers with scarlet stripes, and they looked very gay

indeed, but certainly not *raides militaires*. At one stroke of the gong they knelt down and *shikhoed*; at another they stood up; at further strokes they went through singular manœuvres, with their muskets brandished in one hand or the other. Throughout they looked about them, chewed betel, and conversed cheerfully with their neighbours. The men, as men, were fine material, strong, well seasoned, and averaging about thirty years of age. Individually they were far from contemptible; as a mass they could only excite amusement and derision. They sometimes marched in columns of sections, and sometimes in fours, but both they and their officers obviously looked upon this as mere jaunty display of no possible military value. Each company was preceded by a couple of standards on lance-poles, and men with small gongs were interspersed between sections. Some animal or reptile was the distinguishing badge of each regiment, and this symbol each linesman had tattooed on the small of his back. Thus there was the Regiment of the Dragon, the Lion, the Rat, and so on.

There were elephant batteries and bullock batteries, but the guns were mere popguns, jingals, or culverins of one to two inches in bore and eighteen to twenty inches long. Both elephants and bullocks were very fine animals, and they *shikhoed* just as the soldiers did. The elephants lowered their trunks and the bullocks dropped on their fore-knees to the tap of the gong, and rose again when the rise-up was sounded. Their drill was infinitely better than that of the men and was rigorously insisted on, but the guns were very inoffensive. The artillerymen, according to Colonel Horace Brown were nearly all descendants of the Portuguese and French colonists of the sixteenth and seventeenth centuries, and hence presumed to know all about big guns. They were, however, Burman in habits and appearance, and in everything but religion. They were all Roman Catholics. Whether they would have fought may be doubted, but they were not called upon to do so.

The cavalry would have been very picturesque, if they had not been so dirty and disorderly. As it was, the small ill-kempt ponies, the enormous saddle flaps, the men sitting with their knees up to the chin, and with helmets like the *cuirassiers de la Garde*, merely invited a gibe. The Commandant or Colonel of a cavalry regiment was called *Myin-mu*. Under him were the *Myin-tat-bo* or Captains; then the *Myin-saye*, corresponding perhaps to an Adjutant, and, as non-commissioned officers, the *myin-gaungs* and the *myin-thugyis*.

Latterly the Burman was only formidable as a soldier to the district where he happened to be. There, where his supplies ran

out, he plundered and harried at will. The arrival of troops was looked upon with horror by the villagers, and soldier and robber became convertible terms. At the time of the First Burmese war Burma was a first-rate Oriental power, and the country was full of fighting men, confident in themselves and proud of past victories. In those days it was something to be a Burmese soldier. There was always plenty of fighting, plenty of loot and slaves, if they were victorious, as they were for years. From the time of that first war there was no fighting, and there was no pay. They knew that their arms were hopelessly inferior to those of Europeans, and they looked upon the drill demanded of them as mere fussiness of officers whom they knew to be incompetent.

The Navy.

The Burmese Navy was never formidable. It consisted of old-fashioned war canoes and a few steamers armed with small cannon. The war-canoes were long and narrow, and were usually paddled by from forty to sixty men. The arms were stowed in a rack running amidships. The armed steamers could have effected nothing, and were not called upon to do anything but block the river, which they had not time to do.

The chief naval officers were, the *Hlethin Atwin-wun*, the *Hpaung-wun*, the *Hlethin Bo*, and the *Pè-nin Thugyis*. Under the *Pè-nin Thugyis* were usually fifty-six men, who carried guns as well as paddles. The *Hlethin Bo* had from four to five hundred boats under his command. The *Hlethin Atwin-wun* and the *Hpaung-wun* had the command and supervision of the royal steamers and fleet generally, the supreme command being latterly in the hands of the *Hlethin Atwin-wun*. The sailors and boatmen technically had the revenue derived from fisheries, ferries, *kaing*, and the like. If this were not sufficient, they, like the soldiers, had a right to pay, but it was not often forthcoming.

The five ministers of the Burmese Government retained in office after the withdrawal of power from the *Hlutdaw* were—

The *Wunshindaw Lègaing Myoza Kin-wun Mingyi*, then sixty-four years of age, and with thirty-four years' service under the Burmese Government. He early worked himself into high office, and was for many years the principal minister of the Court of Ava. His intimate knowledge of all the details of the Burmese administration and his long experience specially qualified him for the post of adviser on local matters to the provisional Government at first established in Mandalay, and the belief in his integrity which prompted his selection was justified by his subsequent loyal service.

The *Wunshindaw Taunggwin Myoza Mingyi* was fifty-eight years of age, and had spent thirty-eight years in Government service.

He had formerly been in charge of the treasury and was expected to be of much assistance from his knowledge of revenue matters.

The *Pin Myoza Atwin-wun* was fifty-one years of age, with thirty-two years' service. He was one of the ministers of the *Byè-taik*, or Privy department, and was specially recommended by the *Kin-wun Mingyi* for his experience and ability.

The *Shwetaik Atwin-wun Paukmyaing Myoza* was fifty years of age, and had served the Government for eighteen years. He was in charge of the treasury up to the time of the British occupation of Mandalay, and was thoroughly conversant with the details of the revenue and fiscal administration.

The *Tabayin Wundauk* was forty-four years of age, and had spent twenty-seven years in Government service. He knew English and French well and had travelled and resided in Europe.

The *Kin-wun Mingyi* received a salary of Rs. 1,000 a month, the *Taunggwin Atwin-wun* Rs. 750, and the remaining three Rs. 500.

The remaining members of the *Hlutdaw* and the staff attached were paid off up to the end of March and then ceased to be employed by Government, except in posts reserved for Burmans under civil officers. As many as could be provided for among those who were willing to take office under the British Government were taken into the service of the State. The total cost of the *Hlutdaw* from the 1st December up to the 31st March amounted to Rs. 38,822.

The following chief ministers, with service ranging from forty-three to seventeen years, received pensions of Rs. 200 a month:—

The Maingkaing *Atwin-wun*.
The Myothit *Atwin-wun*.
The Moda *Wundauk*.
The Wetmasut *Wundauk*.
The Pindale *Wundauk*.
The Myinsugyi *Wundauk*.
The Pinya *Wundauk*.
The Kyaukmyaing *Atwin-wun*.
The Thangyet *Wundauk*.

A compassionate allowance of Rs. 100 a month was also granted to two *ex*-ministers, the Yenangyaung *Mingyi* and the Khampat *Mingyi*. The former was over eighty years of age, and the latter was also an old man. Both had held high office under Mindôn Min and both were removed from office and ill-treated by King Thibaw. The daughter of the Yenangyaung *Mingyi* was married to Mindôn Min and she and her son, the Pyinmana Prince, were kept in confinement throughout the whole of Thibaw's reign, and

only released on the arrival of the British troops. Both the *Mingyis* had been reduced to poverty by King Thibaw.

Provincial Administration.

The provincial administration under Burmese rule was very uncertain and unsettled, chiefly owing to favouritism or bribery. It may, however, be roughly described as follows. The whole country was divided into provinces of very unequal size; these into districts; the districts into townships; the townships into villages or hamlets, of which the number in each was indefinite. The word *Myo*, properly meaning a fortified town, was applied both to a province and to a township. The province was an aggregate of districts, each of which took its name from the principal town within its boundary, while the township took its name from the chief village in its limits.

The districts, or subdivisions as we should call them, were administered by *Wuns* or *Wundauks*, who remained at the seat of Government in Mandalay and visited their charge about once in the year. The permanent local officials were the *Myothugyis*, *Daingthugyis*, and *Ywagaungs* and similar officers, known by different names in different parts. In Mandalay they went by the name of *Hkayaing* or *A-we-wuns*, according to their rank and the extent of their charge.

The following is a list of *Awe-wuns*, the Governors of districts and provinces, with their titles, under King Mindôn:—

North.

ရတနာသိင်္ခမြို့ဝန်။ ရဲထက်မြင်းဝန် ...	မင်းကြီးမဟာမင်းထင်မင်းခေါင်။
Yatanathinhka *Myowun*, *Yèbet-myinwun* (Shwebo district).	*Mingyi Maha-mintin-minhkaung.*
ဗန်းမော်မြို့ဝန်	မင်းကြီးမဟာမင်းထင်ရာဇာ။
Bhamo *Myowun*	*Mingyi Maha-mintin-raza.*
မိုးကောင်းမြို့ဝန်	မင်းလှမင်းထင်ရာဇာ။
Mogaung *Myowun* ...	*Minhla-mintin-raza.*
မိုးညှင်း။ ကောင်းတုံ။ ရွှေကူ။ မိုးတား။ ရင်းခဲ။ ကသာ ချောက်မြို့ဝန်။	နေမျိုးမင်းထင်သမန္တရာဇာ။
Mohnyin, Kaungtôn, Shwegu, Moda, Yinhkè, Katha *Chauk-myowun.*	*Nemyo-mintin-thamanta-raza.*
မြတောင်။ ချွန်းတောင်။ တကောင်း။ ဟင်္သာ မော်။ ကြာညှပ် ငါးမြို့ဝန်။	မင်းလှမင်းထင်သမန္တစည်သူ။
Myadaung, Chundaung, Tagaung, Hinthamaw, Kyahnyat *Nga-myowun.*	*Minhla-mintin-thamanta-sithu.*

ရသာ။ ငှက်ပျော။ ညောင်ပင်။ ပင်းသာ။ နဂါးဆင်း ၅မြို့ဝန်။ Yatha, Hngetpyaw, Nyaungbin, Pintha, Nagasin *Nga-myowun.*	မဟာမင်းလှမင်းထင်ရာဇာ။ *Maha-minhla-mintin-raza.*
ငရနဲ။ခေါ်သန္နိ ၂မြို့ဝန် ... ... Ngayanè, Hkawthanni *Hnit-myowun.*	မဟာမင်းထင်စည်သူ။ *Maha-mintin-sithu.*
မြေတူးမြို့ဝန် ... ... Myedu *Myowun*	နေမျိုးကျော်ထင်ရာဇာ။ *Nemyo-kyawtin-raza.*
ကောလင်း။ခေါင်တုံး ၂မြို့ဝန် ... Kawlin, Hkaungtôn *Hnit-myowun.*	မင်းလှသမန္တရာဇာ။ *Minhla-thamanta-raza.*
ရွှေအရှေ့ကျောင်း။အလယ်ကျောင်းဝန် ... Shwe-ashegyaung, Alègyaung *Wun.*	မဟာမင်းထင်စည်သူ။ *Maha-mintin-sithu.*
မိုင်းလုံမြို့ဝန် ... ... Mainglôn *Myowun* ...	မဟာမင်းလှရန်နိုင်။ *Maha-minhla-rannaing.*
မန်လယ်မြို့ဝန် ... ... Manlè *Myowun*	မင်းလှမင်းထင်ရာဇာ။ *Minhla-mintin-raza.*
စဉ့်ကူးမြို့ဝန် ... ... Singu *Myowun*	မင်းထင်ရာဇာကျော်ခေါင်။ *Mintin-raza-kyawhkaung.*
မတ္တရာမြို့ဝန် ... ... Madaya *Myowun*	မင်းထင်သိဒ္ဓိသူရိန်။ *Mintin-theiddi-thurein.*
စပွယ်နကို။သိန်ကတောမြို့အုပ် ... Sabènago, Theinkataw *Myoôk*...	မင်းထင်ဗလဣန္ဒ။ *Mintin-bala-einda.*
ကွတ်ရွာ။တောင်ဖြုံးမြို့အုပ် ... Kutywa, Taungbyôn *Myoôk* ...	မင်းထင်သူရိန်။ *Mintin-thurein.*

South.

ရွှေပြည်ရန်အောင်မြင်းဝန် ... Shwepyiyanaung *Myinwun* ...	မင်းကြီးမဟာမင်းလှမင်းခေါင်ကျော်။ *Mingyi Maha-minhla-minhkaungkyaw.*
တောင်ငူ။ရမည်းသင်း ၂မြို့ဝန် ... Taung-ngu, Yamèthin *Hnit-myowun.*	မင်းကြီးမဟာသီရိကျော်ထင်။ *Mingyi Maha-thiri-kyawtin.*
တောင်တွင်းကြီးမြို့ဝန် ... ... Taungdwingyi *Myowun* ...	မင်းကြီးမဟာသမိန်လော။ *Mingyi Maha-thameinlaw.*
မိတ္ထီလာမြို့ဝန် ... ... Meiktila *Myowun*	မဟာမင်းထင်မင်းခေါင်စည်သူ။ *Maha-mintin-minhkaung-sithu.*
ရင်းတော်။ရနောင်။ထရံကာ ၃မြို့ဝန် .... Yindaw, Yanaung, Htayanka *Thôn-myowun.*	မင်းလှသမန္တရာဇာကျော်ထင်။ *Minhla-thamanta-raza-kyawtin.*
ညောင်ရမ်း။လှိုင်းတက်။သာဂရ ၃မြို့ဝန် ... Nyaungyan, Hlaingdet, Thagaya *Thôn-myowun.*	မဟာမင်းထင်စည်သူ။ *Maha-mintin-sithu.*

တောင်သာ၊ညောင်အုပ် ၂မြို့ဝန် ... Taungtha, Nyaungôk, *Hnit-myowun.*	မင်းလှစည်သူကျော်။ *Minhla-sithukyaw.*
ပင်း၊နတ်မောက်၊ကျောက်ပန်းတောင်း ၃မြို့ဝန် Pin, Natmauk, Kyaukpadaung *Thôn-myowun.*	မဟာမင်းကျော်မင်းတင်။ *Maha-minkyaw-mintin.*
ကျောက်ဆည်ဝန် ... ... Kyauksè *Wun*	မင်းလှသီရိရာဇာ။ *Minhla-thiri-raza.*
Ditto	{ မင်းတင်သိင်္ခဇေယသူ။ *Mintin-thinhka-zeyathu.*
အမရပူရမြို့အုပ် ... ... Amarapura *Myoôk*... ... }	......
မြို့သာ၊ဘောင်ဂျင်း ၂မြို့ဝန် ... Myotha, Baunggyin *Hnit-myowun.*	မင်းလှမင်းခေါင်ရာဇာ။ *Minhla-minhkaung-raza.*
စစ်ကိုင်းမြို့ဝန် ... ... Sagaing *Myowun*	မဟာမင်းတင်ကျော်ခေါင်။ *Maha-mintin-kyawhkaung.*
အင်းဝမြို့ဝန် ... ... Eng-wa (Ava) *Myowun* ...	မင်းကြီးမဟာကျော်ထင်။ *Mingyi Maha-kyawtin.*
မြို့သာ၊ဘောင်ချင်း ၂မြို့ဝန် ... Myotha, Baungchin *Hnit-myowun.*	မင်းလှမင်းခေါင်ရာဇာ။ *Minhla-minhkaung-raza.*
အလုံမြို့ဝန် ... ... Alôn *Myowun*	မင်းကြီးမဟာသမိန်ဘရမ်း။ *Mingyi Maha-thameinbayan.*
တပရင်းမြို့ဝန် ... ... Tabayin *Myowun*	မင်းကြီးမင်းလှမဟာမင်းခေါင်။ *Mingyi Minhla-maha-minhkaung.*
အမြင့် ၅ မြို့ဝန် ... ... Amyin *Nga-myowun* ...	မင်းကျော်သီရိစည်သူ။ *Minkyaw-thiri-sithu.*
ကန္နီ၊မင်းကင်း၊တောင်တွင်းချောင် ၃မြို့ဝန်... Kanni, Mingin, Taungdwingyaung *Thôn-myowun.*	မဟာမင်းလှမင်းတင်ရာဇာ။ *Maha-minhla-mintin-raza.*
တမူး၊ခန်းပတ် ၂မြို့ဝန် ... ... Tamu, Hkampat *Hnit-myowun*	မဟာမင်းလှမင်းကျော်သူရိန်။ *Maha-minhla-minkyaw-thurein.*
ဗန်ကျီတိုက်ဝန် ... ... Bangyitaik *Wun*	မဟာဒေဝမင်းခေါင်။ *Maha-dewa-minhkaung.*
ယော၊ဆော၊လောင်းရှည်၊ထီးလင်း ၄မြို့ဝန် Yaw Saw, Laungshe, Htilin *Le-myowun.*	မင်းတင်မင်းလှရာဇကျော်ခေါင်။ *Mintin-minhla-raza-kyawhkaung.*
မင်းတုန်း၊တောင်စည် ၂မြို့ဝန် ... Mindôn, Taungsin *Hnit-myowun.*	မဟာမင်းခေါင်နော်ရထာ။ *Maha-minhkaung-nawra-hta.*
မြေထဲ၊မလွန် ၂မြို့ဝန် ... ... Myedè, Malôn *Hnit-myowun* ...	မဟာမင်းတင်မင်းခေါင်ရာဇာ။ *Maha-mintin-minhkaung-raza.*

စလင်း။ကျပင်း။စကု။လယ်ကိုင်း ၄မြို့ဝန် ...	မဟာမင်းလှမင်းတင်ရာဇာ။
Salin, Kyabin, Sagu, Lègaing *Le-myowun.*	*Maha-minhla-mintin-raza.*
ပုဂံမြို့ဝန်	မဟာမင်းတင်မင်းခေါင်။
Pagan *Myowun*	*Maha-mintin-minhkaung.*
တလုတ်မြို့ဝန်	မဟာမင်းကျော်မင်းတင်ရန်အောင်။
Talôk (Myingyan) *Myowun* ...	*Maha-minkyaw-mintin-ranaung.*
မြင်ခွန်း။မကွေး ၂မြို့ဝန်	မဟာမင်းတင်မင်းကျော်ရာဇာ။
Myingôn, Magwe *Hnit-myowun*	*Maha-mintin-minkyaw-raza.*
ပုခန်းကြီးမြို့ဝန်	မင်းတင်မင်းလှရဲခေါင်။
Pahkangyi *Myowun* ...	*Mintin-minhla-yèhkaung.*
ပုခန်းငယ်။ကျောက်ရဲ ၂မြို့ဝန် ...	မင်းလှမင်းခေါင်ကျော်တင်။
Pahkanngè, Kyaukyè *Hnit-myowun.*	*Minhla-minhkaung-kyawtin.*
ရေနံချောင်း။ဝက်မစွတ် ၂မြို့ဝန် ...	မင်းကျော်မင်းတင်ရန်အောင်။
Yenangyaung, Wetmasut *Hnit-myowun.*	*Minkyaw-mintin-ranaung.*
စလေမြို့ဝန်	မင်းလှသီရိရာဇာ။
Sale *Myowun*	*Minhla-thiri-raza.*

The following is a list of the District Establishments :—

SAGAING.

One *Wun.*
Two *Taung-hmus.*
Two *Myo-sayes.*

AVA.

One *Wun.*
Two *Taung-hmus.*
Two *Myo-sayes.*

ALÔN.

One *Wun.*
Two *Sit-kès.*
Two *Myo-sayes.*
Six *Yazawut-ôks.*

TABAYIN.

One *Wun.*
Two *Thin-thenat-bos.*
Two *Thin-thenat-sayes.*

BANGYI TAIK.

One *Wun.*
Two *Sit-kès.*
Two *Taik-sayes.*

KAN-NI.

One *Wun.*
Two *Sit-kès.*
Two *Myo-sayes.*

MINGIN.

One *Wun.*
One *Sit-kè.*
Two *Myo-sayes.*

AMYIN NGA-MYO.

One *Wun.*
One *Sit-kè.*
Two *Myo-sayes.*

HKANPAT.

One *Wun.*
Two *Sit-kès.*
Two *Na-hkans.*
Two *Myo-sayes.*

KALE.

One *Sawbwa.*
One *Kyamaing* (*Heir Apparent*).
Two *Amats* (*Councillors*).

MAINGKAING, MAINGNYAUNG.

One *Wun*.
One *Sit-kè*.
Two *Myo-sayes*.

KYAUKSÈ.

Two *Wuns*.
Four *Si-sayes*.

SHWEBO.

One *Wun*.
Two *Myintat-bos*.
Two *Myin-sayes*.
Many *Myingaungs*, equivalent to *thugyis*.

TANTABIN, PYINSALA.

One *Wun*.
Two *Sit-kès*,
Two *Na-hkans*.
Two *Myo-sayes*.

MYEDU.

One *Wun*.
Two *Sit-kès*.
Two *Myo-sayes*.

KAWLIN.

One *Wun*.
One *Sit-kè*.
One *Myo-saye*.

WUNTHO.

One *Sawbwa*.
One *Kyamaing* (*Heir Apparent*).
Two *Amats*.

MOGAUNG.

One *Wun*.
Two *Sit-kès*.
Two *Na-hkans*.
Two *Myo-sayes*.

BHAMO.

One *Wun*.
Two *Sit-kès*.
Two *Na-hkans*.
Two *Myo-sayes*.

MOHNYIN.

One *Wun*.
One *Sit-kè*.
One *Na-hkan*.
Two *Myo-sayes*.

MOMEIT, MOHLAING.

One *Sawbwa*.
One *Kyamaing*.
Two *Amats*.

MYADAUNG.

One *Wun*.
Two *Myo-sayes*.

MANLE.

One *Wun*.
Two *Myo-sayes*.

SINGU.

One *Wun*.
One *Sit-kè*.
Two *Lamaing-sayes*.

MADAYA.

Two *Wuns*.
Four *Si-sayes*.

MAINGLÔNG (east of SINGU).

One *Wun*.
One *Sit-kè*.
Two *Myo-sayes*.

ASHEGYAUNG (near KAWLIN).

One *Wun*.
One *Sit-kè*.
Two *Myo-sayes*.

NGAYANÈ, KAWTHANNI (near SHWEBO).

One *Wun*.
One *Myo-saye*.

THINKADAW, SABÈNAGO.

One *Myoôk*.
Two *Myo-sayes*.

KUTYWA TAUNGBYÔN (near MADAYA).

One *Myoôk*.
One *Myo-saye*.

AMARAPURA.
One *Myoôk.*
One *Myo-saye.*

TAUNGNGU, YAMÈTHIN.
One *Wun.*
Two *Sit-kès.*
Two *Na-hkans.*
Two *Myo-sayes.*

MEIKTILA.
One *Wun.*
One *Sit-kè.*
Two *Myo-sayes.*

PINDALÈ.
One *Wun.*
One *Sit-kè.*
Two *Myo-sayes.*

TAUNGDWINGYI.
One *Wun.*
Two *Sit-kès.*
Two *Na-hkans.*
Two *Myo-sayes.*

PIN, NATMAUK, KYAUK-PADAUNG.
One *Wun.*
Two *Myo-sayes.*

YINDAW, YANAUNG, TAYANGA.
One *Wun.*
Two *Myo-sayes.*

TAUNGTHA, NYAUNGÔK.
One *Wun.*
Two *Myo-sayes.*

TALÔKMYO (near MYINGYAN).
One Wun.
Two *Thenat-sayes.*

PAHKANGYI.
One *Wun.*
Two *Thin-thenat-bos.*
Two *Thin-thenat-sayes.*

PAGAN, SALE.
One *Wun.*
One *Sit-kè.*
Two *Myo-sayes.*

NYAUNGYAN, HLAINGDET, THAGAYA.
One *Wun.*
Two *Myo-sayes.*

SALIN, KYABIN.
One *Wun.*
Two *Sit-kès.*
Two *Myo-sayes.*

SAGU, LÈGAING.
One *Wun,*
Two *Myo-sayes.*

MALUN, MYINGUN, PATANAGO, TAUNGGWIN, MYEDÈ, THAYET.
One *Wun.*
Two *Sit-kès.*
Two *Na-hkans.*
Two *Myo-sayes.*

YENANGYAUNG, KYAUKYÈ, PAHKAN-NGÈ, WETMASUT.
One *Wun.*
Two *Myo-sayes.*

MAGWE.
One *Wun.*
Two *Myo-sayes.*

MINDÔN, TAUNGSÈ.
One *Wun.*
One *Sit-kè.*
Two *Myo-sayes.*

YAW LEMYO.
One *Wun.*
Two *Sit-kès.*
Two *Myo-sayes.*

The *Wuns*, or Governors, were vested with the entire charge, civil, judicial, military, and fiscal, within the limits of their charges. They were subordinate only to the *Hlutdaw*, and had otherwise bsolute powers. Only the King could appoint or remove them

The *Wun* ordinarily could sentence to death non-officials guilty of murder, dacoity, rebellion, or men three times convicted of theft, and there was no appeal; but in King Mindôn's time it was laid down that no death sentence could be carried out without confirmation from the *Hlutdaw*. In cases of officials the *Wun* could order their arrest and apply to the *Hlutdaw* for orders. The officers subordinate to the Governors of districts had no power to sentence to death, and technically could only try minor cases, but in most districts rules were very laxly observed, and in civil cases in particular every officer seems to have considered that he had unlimited jurisdiction.

Civil and criminal justice were exercised by the *Hkayaing Wuns* with full powers. They were the supreme authority in their districts, and the ultimate resort of the villagers for justice or relief. The *Myothugyis*, *Thwethaukgyis*, *Myingaungs*, *Nè-ôks*, and the like officers, under different names in different districts, exercised civil judicial power without limit, and large crimin al powers also,though serious cases were sent to the *Wun*.

These officers were usually in charge of a *Myo*, which might be a single town, or a town with its subordinate villages. In the latter case the separate villages had thugyis, who were under the direct orders of the *Myothugyi*, *Nè-ôk*, or whatever his local title was. Occasionally a *Myothugyi* was placed over a large number of villages, not attached to any particular township. Their chief source of pay was the commission they drew on all revenue collections, but they also made a good deal of money from fees in the cases they tried.

Thugyis also had unlimited civil judicial power, and general criminal jurisdiction in their more limited areas, in the same way as the *Myothugyis* and *Thwethaukgyis*.

There were also separate civil judges. These Courts and the higher Courts generally seem to have exercised concurrent jurisdiction in civil suits, and no inconvenience seems to have been felt.

The *thugyi* often decided with the assistance of the *lugyis*, and often these village elders sat without the *thugyi*. No regular process for execution of a decree was known. The losing party seems generally to have paid up with no more words.

Ordeal was frequently resorted to both by water and by fire. In the former case both parties ducked their heads under water and the one that came up first lost. In the ordeal by fire one *tical* weight of wax was given to each party, and they made each their taper out of it. The tapers were lighted simultaneously before the pagoda and the man whose taper lasted longest won the case. Chewing rice and plunging the finger in molten lead seem to have been more uncommon in the provinces than they were in the capital.

The civil law administered was nominally that of the *Dhammathats*, but as a rule the dispensers knew very little about them. It may be said that the *Dhammathats*, modified by the rulings of the Sages and a good deal by local custom, formed the customary law of the people. As there was no absolute finality in any Court and as the judges were far from being incorruptible, the longest purse was most likely to win.

The *Wun* rarely heard cases himself. The *Wun-saye* or *Sitkè* did so for him. They examined the parties and the witnesses, all being present together, and sometimes they made notes of the evidence, sometimes not. The *Wun* himself was occasionally present, looking on, but usually he did not take that trouble. He decided on the notes of the case, or on the verbal account given to him by his subordinate and passed judgment, which was communicated to the parties by the *Saye* or other subordinate.

The *Myothugyis* and *thugyis* similarly seem never to have heard civil cases themselves, but invariably referred them to their clerks, who were universally credited with some knowledge of civil law. The *Saye's* decision was received as that of his superior.

Thwethaukgyis, *Myingaungs*, or officers of the same grade, and *thugyis* received certain authorized fees in civil suits :—

Tagadet—a sum of Rs. 1-8-0 from each party.

Saing-gyôk-kyi—a sum of 8 annas from each party.

Kaukchet-kyi—a sum of Rs. 1-8-0 from the defendant and Rs. 1-4-0 from the plaintiff.

Nyanpusaw—a sum of Re. 1 from each party.

Let-tin—a sum of 8 annas from each party.

Lapet—a sum of 4 annas from each party.

The *tagadet* was technically the payment of the writer who took down the evidence. The *nyan-pu-saw* (literally, distinguished knowledge) was a tribute to the learning of the judge. The *lettin* and *lapet* (or *letpet*) fees were for the solace of the tipstaffs and peons of the Court.

Besides these, however, there were a multitude of extortionate fees charged in many Courts. Such were—

> *Eik-hka*, fee for the "bag,"
> *Parabaik-hka*, fee for the record book,
> *Kan-kusan-hka*, fee for the steatite pencil with which the record was made,
> *Zayèit-hka*, fee for the journey,
> *Lôk-tha-hka*, fee for the followers,

besides others devised by the more imaginative of the judges.

Ten *per cent.* was also collected on the value of all civil suits decided by the *Wun*, as well as in criminal cases where fines were inflicted. There were special officers called *Kun-bodein* (price of betel) appointed to make these collections. Sometimes the proceeds seem to have been paid into the Treasury, sometimes given as pin-money to the Chief Queen. It is said that the practice of appointing *Kun-bodeins* ceased, at any rate in some districts, in the time of King Thibaw.

Criminal justice depended more perhaps on the will of the officer exercising power than on any law. The *Wun* could inflict any punishment he pleased for any offence. Most offences, except those against the State, dacoity, and persistent theft could be purged by fine. Dacoits were sometimes put to death ; often imprisoned for a time and then released on payment of a sum of money. For rape, or adultery on a woman of the ordinary or cultivating class, the fine was ordinarily thirty rupees if she were a consenting party, sixty rupees if not, and if the offence had been committed in a village. The fine was doubled if it were committed in the jungle.

Criminal cases were regarded rather as civil suits between the parties, except in State offences or dacoity. The punishments were fine, or a whipping, up to five lashes usually, or in bad cases *maung kyaw*, where the offender was carried through all the villages of the circle with his hands tied behind his back to the sound of a gong, his offence proclaimed, and a few lashes administered in each village. Death was usually not pronounced as a sentence, but followed in prison after a sentence of imprisonment, and was attributed to disease. All Magistrates even of the lowest grade had the power to inflict torture. When death resulted, as it not infrequently did, it was noted as an accident and no more was thought about it.

No records seem ever to have been kept, and the judgments were usually passed by mere word of mouth. There were no proper gaols in which prisoners could be confined. The *Wuns* usually had a sort of barrack in which under-trial prisoners and convicts could be detained. No fixed term of imprisonment was mentioned in a sentence. The prisoners had to feed themselves. If they had no relations to get food for them, they had to beg for it through the town, under guard and in chains. Release was usually procured by the payment of a sum of money, either by the prisoner himself or by his friends.

Some of the more unscrupulous *Wuns* in King Thibaw's time recruited the bands of dacoits which they maintained from their gaols.

All classes of officers, *Myothugyis*, *Thugyis*, *Thwethaukgyis* *Myingaungs*, *Myinsis*, *Nè-ôks*, *Ywa-ôks*, *Ywagaungs*, *Thenatôks*, *Taw-ôks*, and *Tawgès*, were appointed by the King, and were the legitimate and generally recognized administrative and executive officials. But the system was subject to alteration with the Royal whim. If the King desired to favour or honour a particular person, he never failed to make an appointment for him, if none suitable existed. Thus a *Thenatôk* or a *Tawgè* might be appointed to the charge of a circle, and any invidual officer might be relieved from subordination to his proper chief.

All officials, down to *thugyis*, appointed directly by the King, were styled *A-mein-dawhkan*. They took the oath of allegiance and could only be dismissed by the King. They were included as a class in the eight thousand petty nobles, the *Amatshittaung*, and all of them, except the most distant, went to the capital every year to *kadaw*. Nominally, and sometimes practically, they owned, or had at their disposal, all the land in the circle, and could distribute it at their will, or resume it without assigning any reason. The thugyi's office was hereditary, but occasionally a *Hkayaing Wun*, in the absence of a direct descendant, appointed any one as a successor. Such a person was called a *Saing-ya Hkaṇ thugyi*, and removeable by the divisional *Wun*, and of course by the King. In old days the thugyi received lands as an appanage of his office. These were inalienable. If the land were mortgaged on account of money raised for the King, the thugyi's successor was bound to redeem it. If it were mortgaged for private debts, the children of the thugyi were bound to redeem it, either for themselves, if one of them should succeed their father in office, or for their father's successor.

In the reign of King Bodaw Paya, in 1783, a complete record of the officials, population, and resources of the whole of the Burmese Empire was made. This *Shwetaik Sayin*, the Burmese Doomsday Book is constantly referred to as the "*Sittan* of forty-five" (1145 B.E.). Every official, however petty, was required to make a statement on oath of the extent, boundaries, and population of his jurisdiction. There was another similar Settlement in 1164 B.E. (1802). To the officials recorded in these statistical registers the hereditary thugyis of the present day are accustomed to trace their lineage.

The duties to be discharged by *ahmudan*, and the lands to be enjoyed by them in payment for their services, were all set out in *Sittan*. Most of these, however, latterly existed only in uncertified copies. Notwithstanding their hereditary rank *thugyis* and *Myothugyis* were frequently ousted by their enemies, or by Court

favourites, or had the office bought over their heads, and their status was in most districts anything but secure.

There was no regular form of judicial procedure, but the commonly adopted form seems to have been something like this in civil cases. Suitors presented their plaints to the judge in the form of a written petition. He examined the plaintiffs and then passed orders as to the hearing of the suit. A fee of one rupee was charged on institution. On the date fixed for hearing the suit both parties were examined by the judge's clerk, who made notes of their depositions and levied fees of two rupees from the plaintiff and two rupees four annas from the defendant. These he pocketed himself.

The parties and proceedings and records were then taken before the Judge, who pronounced judgment. For this a fee of two rupees was charged on each party. All fees paid by the plaintiff were recovered from the defendant in case of judgment in the plaintiff's favour. The plaintiff had to pay the "king's share" of ten per cent. on the value of the suit, but the judge pouched it for the King. As in the capital, the eating of salad tea made the settlement final.

Persons dissatisfied with the finding of the judge appealed to the next higher authority. If the Appellate Court was in another part of the country, the proceedings were sent on by the judge's clerk, and each party had to pay the clerk eight annas a day travelling allowance, and four annas a day for his servant.

The procedure in criminal cases was practically the same. The usual punishment was a fine, which in cases of theft was double the amount or value of the property stolen. Imprisonment was only inflicted in default of payment, or for heinous offences.

All fines, both in civil and criminal cases, invariably remained in the pockets of the Magistrate. Prisoners were nowhere supported by the State. They had to pay the jailor for their fetters and beg morning and evening for their food. If poor, they were roughly treated, but there was no such additional penalty as our hard labour.

A person who murdered one of his own rank, or of a lower rank, could escape punishment by paying the *thetbo*, the value of a human body, which was three viss of silver.

In addition to trying all cases, civil and criminal, and collecting land revenue, the duties of all provincial officials included the repairing of roads, bridges, embankments, and irrigation channels within the limits of their charge. They were at one and the same time police officers, magistrates, judges, revenue officers, and engineers, and there were no rules limiting their powers or their duties.

No officers, not even the *Wun*, had any regularly paid staff. All had a number of personal followers, from among whom *yazawut-ôk*

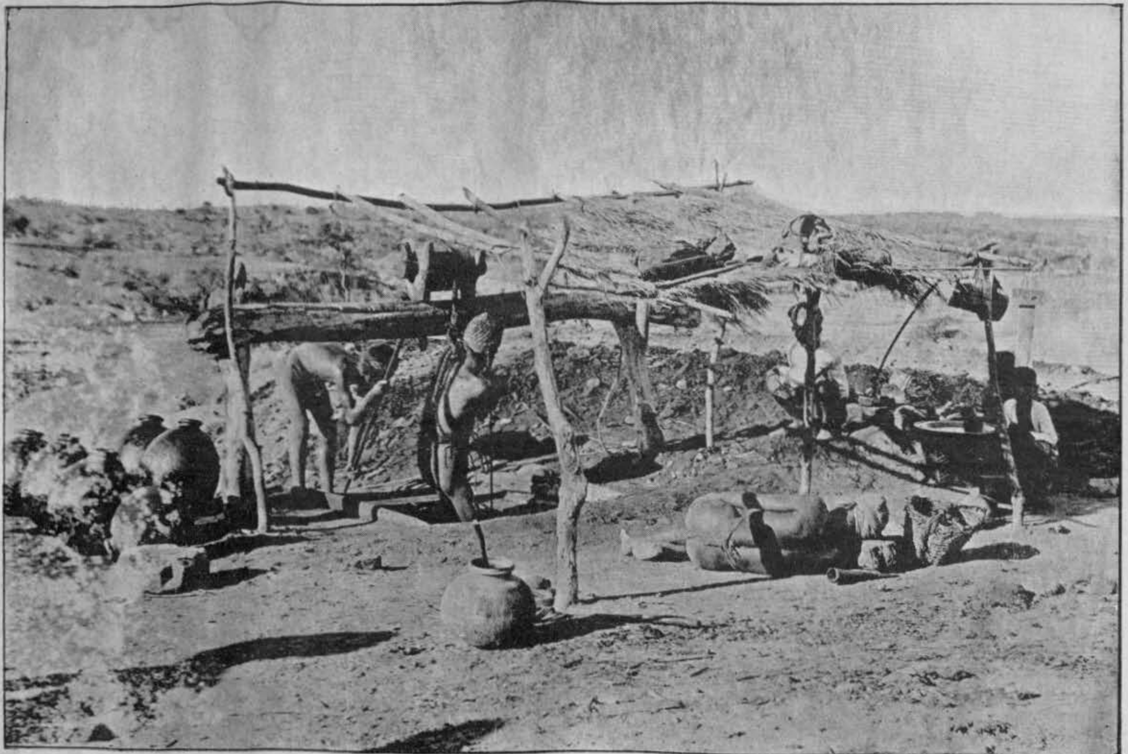


Photo-Block.

Survey of India Offices, Calcutta, 1899.

A YENANGYAUNG OIL WELL.

and *ywa-ôk*, police constables and rural guardians, might be appointed, but neither they nor the others had any pay, and they were tacitly allowed to support themselves off the people.

The *Myowun* had the following insignia,—A golden umbrella, gold cup, silver spittoon, and a sword laid on a stand, the sheath ornamented with guns and elephants.

The *Wun-saye* or *Thenat-saye* had an umbrella with gilt leaves at the top and a laced hanging fringe, a gilt sword, gold cup, and silver spittoon.

The *Myothugyi*, or *Myingaung*, had a red umbrella with gilt leaves at the top, a silver cup and gilt sword.

The *Thwe-thauk-gyi* or *Myin-si* had a red umbrella, silver cup, and sword.

The *Thugyi* had a red umbrella and silver sword.

ADMINISTRATION SINCE THE ANNEXATION.

The first administration report of Upper Burma describes the establishment of British authority as follows :—

"The constitution of Upper Burma into a scheduled district removed it from the operation of the Statute law, which applies to the rest of the Empire. One of the first acts of Sir Charles Bernard therefore on his return to Mandalay in March 1886 was to publish instructions to Civil Officers. By these instructions each district was placed in charge of a Civil Officer, who was invested with the full powers of a Deputy Commissioner and, in criminal matters, with power to try as a Magistrate any case, and to pass any sentence. The Deputy Commissioner was also invested with full power to revise the proceedings of any Subordinate Magistrate or official, and to pass any order except an order enhancing a sentence. In criminal matters the Courts were to be guided as far as possible by the provisions of the Code of Criminal Procedure, the Penal Code, and the Evidence Act. But dacoity or murder was made punishable with death, though Magistrates were instructed to pass capital sentences only in very heinous cases. In order to provide a safeguard against undue severity in the infliction of punishments it was ordered that no capital sentence should be carried out except after confirmation by the Chief Commissioner. No regular appeals were allowed from any decision; but it was open to any one who felt aggrieved by the decision of a subordinate officer to move the Deputy Commissioner to revise the order, and for any one who demurred to an order passed by a Deputy Commissioner to bring the matter to the notice of the Chief Commissioner. In revenue matters the customs of the country were as far as possible to be observed, save that no monopolies (except that of precious stones) were allowed, and no customs or transport duties were levied. As regards excise administration, in accordance with the custom of the country, the sale of opium and of intoxicating liquors to Burmans was prohibited.

"These provisional instructions were formally legalized by the Upper Burma Laws Act, which came into force on the 29th November 1886, exactly one year after the British occupation of Mandalay. This Act applied to the whole of Upper Burma, with the exception of the Shan States, the Indian Penal Code, without material alteration or addition, the Evidence Act, with one unimportant variation, and, with some modifications of detail, a number of general Acts such as are necessary for the administration of the country. It also contained a few provisions necessary to enable districts to be constituted and other administrative machinery set in motion. By the Criminal Justice Regulation the Code of Criminal Procedure was introduced, with a few modifications of detail, limiting the right of appeal, investing District Magistrates with the powers of Sessions Courts, simplifying the procedure for recording the evidence of witnesses, and prohibiting the reversal of judicial decisions on purely technical grounds. The Civil Justice Regulation provided for the constitution of regular courts for the trial of civil suits, and prescribed a procedure similar to but somewhat simpler than that contained in the Civil Procedure Code. Various Regulations followed providing for the establishment of Municipalities, the registration of documents affecting immoveable property, the administration and control of the forests, the limitation of suits, and the declaration of the law concerning stamps. The most important of these was the Village Regulation, which proved of the greatest value in strengthining the hands of District Officers and placing on a legal and assured basis the organization of the village community, the foundation of settled Government among a people in a comparatively backward stage of civilization."

The Shan States are administered by the Chiefs of the States, subject to the supervision of the Superintendents of the Northern and Southern Shan States in respect to the great bulk of the States, and to the supervision of the Commissioners of the adjoining Divisions in the case of the few detached States. The law administered in the States is, subject to the extension to them of specific enactments in force in the rest of Upper Burma, the customary law of the States so far as it is in accordance with justice, equity, and good conscience, and not opposed to the spirit of the law in force in the rest of British India.

The law in force in Upper Burma is being gradually assimilated to that which prevails in Lower Burma, but there are still wide divergencies.

There have been many changes in the administrative divisions of the Upper Province since the Kingdom of Ava was annexed in 1885. The new territory was at first divided into four Commissionerships or divisions—

(1) The Northern, with the districts of—

Mandalay.	Bhamo.
Myadaung.	Shwebo.

(2) The Central, with the districts of—

Kyauksè	Ye-u.
Ava.	Upper and Lower Chindwin
Sagaing.	

(3) The Southern, with the districts of—

Myingyan.	Minhla.
Pagan.	Taungdwingyi.

(4) The Eastern, with the districts of—

Ningyan (early changed to Pyinmana).	Yamèthin.
	Meiktila.

This original division has been greatly altered from time to time.

The Myadaung district was early deprived of the Male township, which was given to Shwebo, and of the Ruby Mines, which was formed into a separate district, with the alternative name of Mogôk: while after this mutilation, Myadaung changed its name to Katha, and some years later added to its area the State of Wuntho, which was annexed in consequence of the rebellion of the *Sawbwa*. Still later, Myitkyina was cut off from the Bhamo district and created a district by itself.

The Central division lost Kyauksè as soon as the railway was opened, and before this Ava had become a subdivision of the Sagaing district. On the other hand Ye-u was merged in Shwebo and brought that district into the Central division. The Upper and Lower Chindwin also became separate districts. The Eastern division received Kyauksè from the Central division and Myingyan from the Southern, and Pyinmana became a subdivision of Yamèthin.

The Southern division has been changed beyond all recognition. First of all the areas of all the districts were re-distributed. The townships of Taingda, Minhla, and Sinbaungwè (formerly called *Myedé Kyan*, "the remnant of Myedè,") were handed over to the Thayetmyo district of Lower Burma. At the same time the headquarters of the Minhla district were removed (early in 1886) from Minhla to Minbu, which gave its name to the district. Taungdwingyi absorbed Magwe and the latter town became the district headquarters. The district of Pagan, which at first lay on both sides of the Irrawaddy, was broken up. Pagan east of the river became a subdivision of Myingyan, Myingyan gave up its subdivision west of the river, and out of this and the western subdivision of Pagan was formed the Pakôkku district. Finally Thayetmyo district, in 1897, was attached to the Southern division and Myingyan was transferred to the Eastern division. In 1897 the names of the

divisions were changed and the list of divisions and districts is now as follows:—

	Districts.
(1) Minbu division	Thayetmyo. Pakôkku. Minbu. Magwe.
(2) Mandalay division	Mandalay. Bhamo. Myitkyina. Katha. Ruby Mines.
(3) Sagaing division	Shwebo. Sagaing. Lower Chindwin. Upper Chindwin.
(4) Meiktila division	Kyauksè. Meiktila. Yamèthin. Myingyan.

The four Commissioners are *ex-officio* Sessions Judges in their several divisions and have civil powers under the Upper Burma Civil Justice Regulation, 1886, and powers as Revenue Officers under the Upper Burma Land and Revenue Regulation, 1889. They are responsible to the Lieutenant-Governor, each in his own division, for the working of every department of the public service, except the Military department and the branches of the administration directly under the control of the Supreme Government.

The sixteen Deputy Commissioners (or seventeen since Thayetmyo has been added to the Minbu division) perform the functions of District Magistrates, District Judges, Collectors, and Registrars, and the miscellaneous duties which fall to the principal District Officer as Representative of Government. Subordinate to the Deputy Commissioners are Assistant Commissioners, Extra Assistant Commissioners, and Myoôks, who are invested with various magisterial, civil, and revenue powers, and hold charge of the townships, as the units of regular civil and revenue jurisdiction are called, and the sub-divisions of distrcts, into which most of these townships are grouped. Among the salaried staff of officials the Township Officers are the ultimate representatives of Government who come into most direct contact with the people. Finally there are the village headmen, assisted in Upper Burma by elders variously designated, according to old custom, previously described. Similarly in the towns there are headmen of wards and elders of blocks.

In Upper Burma these headmen have always been revenue collectors. When British rule was first introduced attempts were made by officers who had been accustomed to the Lower Burma *taikthugyi* system to introduce that system into Upper Burma. This, however, is now carefully guarded against and the *Myothugyis*, or heads of groups of villages, are being weeded out as occasion offers. The system under which in towns headmen of wards and elders of blocks are appointed is of comparatively recent origin and is modelled on the village system.

The revenue administration of the entire province is superintended by a Financial Commissioner, assisted by two Secretaries and a Director of Land Records and Agriculture, with a Land Records Departmental staff.

The purely judicial officers are the Judicial Commissioner for Upper Burma and the Civil Judge, Mandalay Town. In criminal and civil matters the Judicial Commissioner exercises the powers of a High Court for appeal, reference, and revision of all cases, except those for which the Recorder of Rangoon is the High Court. The Recorder is a High Court for all Burma in respect of criminal cases in which European British subjects are accused. For the disposal of certain references and for the trial of such original cases and appeals from decrees in civil cases as may be transferred to it by the Local Government, the Judicial Commissioner and the Recorder and, if the Local Government so direct, the Judge of Moulmein, sit together as the Special Court.

The Civil Court of Mandalay, which at present consists of one Judge, has jurisdiction in all civil suits arising in Mandalay Town, or which may be transferred to it. The Judge has also the powers of a Small Cause Court for the trial of suits cognizable by such Courts up to Rs. 500 in value..

At the principal towns Benches of Honorary Magistrates, exercising powers of various degrees, have been constituted. The greater number are in Mandalay, Pakôkku, and Myingyan, but there are three at Katha, and one in Myitkyina. There are Cantonment Magistrates at Mandalay, Meiktila, Myingyan, Shwebo, Bhamo, and Maymyo.

There are fifteen Municipal towns in Upper Burma, including Thayetmyo. None of the members are appointed by election, as they are in many of the Lower Burma Municipalities.

Civil Divisions.

The Civil Divisions have already been indicated. It remains to briefly describe their characteristics. Upper Burma, exclusive of the Shan States, was divided by Notification No. A (1), dated the 29th November 1886, into

four Divisions. The names then given were found inappropriate to the altered circumstances of the Province, and at the close of 1896 they were changed from Northern, Central, Eastern, and Southern, to Mandalay, Sagaing, Meiktila, and Minbu. The Mandalay Division, with headquarters at Mandalay, contains five districts, with 25,765 square miles and a population of 640,708, of which one-fourth reside in Mandalay town. The districts of the Mandalay Division are as follows: Mandalay, with five subdivisions and seven townships; Bhamo, containing two subdivisions (including part of the Kachin Hills) and two townships; Myitkyina, containing two sub-divisions (including the remainder of such Kachin Hill Tracts as are administered) and two townships; Katha, containing three subdivisions and eight townships; this district includes what was formerly the Shan State of Wuntho; Ruby Mines, containing three subdivisions (one of which, Möng Mit, is only temporarily administered), and six townships, three of which are in Möng Mit.

The Sagaing Division, with headquarters at Sagaing, contains four districts, with an area of 29,979 square miles and a population of 822,447. These districts are,—Shwebo, with three subdivisions and ten townships; Sagaing, with three subdivisions and seven townships; Lower Chindwin, with two subdivisions and five townships; Upper Chindwin, with four subdivisions and nine townships, including what was formerly the Shan State of Kale.

The Minbu Division, with headquarters at Minbu, contains three districts of Upper Burma proper (Thayetmyo has one subdivision, Minhla, which lies beyond the old frontier), and has an area of 12,900 square miles, with a population of 746,792. The districts are,—Pakôkku, with four subdivisions and nine townships; the Yawdwin subdivision borders on a portion of the Chin Hills and the Subdivisional Officer has the powers of a Political Officer in the Chin Hills marching with his subdivision; Minbu, with two subdivisions and six townships; Magwe, with two subdivisions and six townships.

The Meiktila Division, with headquarters at Meiktila, includes four districts and has an area of 10,854 square miles, with a population of 902,320. The districts are,—Kyauksè, with two subdivisions and four townships; Meiktila, with two subdivisions and five townships; Yamèthin, with two subdivisions and six townships; Myingyan, also with two subdivisions and six townships.

The Shan States are estimated to contain about forty-thousand square miles and about half a million of inhabitants. There are five States under the supervision of the Superintendent, Northern Shan States, thirty-nine under the Superintendent and Political Officer, Southern Shan States, two under the Commissioner, Man-

dalay Division, (Hkamti Long, north of Myitkyina district, and Möng Mit, which is being temporarily administered as a subdivision of the Ruby Mines district), and two, Hsing Kaling Hkamti and Hsawng Hsup near Manipur, under the supervision of the Commissioner, Central Division.

Municipalities.

Towards the end of 1886, the Government of India were moved to sanction the extension to Mandalay of the Municipal Act in force in Lower Burma. After some discussion it was decided that the Burma Municipal Act was too elaborate a measure for the needs of a newly acquired province. A regulation providing for the establishment of Municipalities in the more important towns, and defining briefly but comprehensibly the powers, duties, and responsibilities of Municipal Committees, was assented to by the Governor-General in Council in July 1887 and the Mandalay Municipality was constituted on the 22nd of that month. Within the year fifteen other Municipalities were established in Upper Burma.

The Regulation provides for the appointment, and not for the election, of members of Municipal Committees. The Committees consist of the Chief Civil Officer of the town, the Civil Surgeon, the Executive or Assistant Engineer, and a number of the leading native officials and non-officials. In military stations the Officer Commanding, if he is willing to become a member, occupies a seat on the Committee. Receipts are credited to Municipalities from the following heads of revenue collected within their limits :—

Rent of fisheries within Municipal limits.

Bazaar rents.

Slaughter-house fees.

Fines under the Gambling and Excise Laws.

In addition to these assigned funds, Municipalities receive taxes levied under the Regulation and fines imposed for the breach of Municipal rules. Most of the Municipalities imposed taxes which took the form of a house-tax, levied on the same principle as the *thathameda*.

The duties of the Municipal Committee include the provision of funds for the police establishment of the town, the care of roads and drains, the maintenance of works of public utility, the encouragement of education, and generally the promotion of the health and comfort of the inhabitants of the Municipality. Power to make rules for the conduct of business is vested in Committees, and, subject to the control of the Lieutenant-Governor, power is also given them to make rules for carrying out the purposes of

the Act. Municipal institutions were not foreign to the Burmese. In fact they are merely an extension of the duties carried out by the village organization in the rural parts of the country. The most productive item in most Municipalities at first was bazaar receipts, and several Municipal Committees incurred considerable expenditure in building substantial bazaars. The commonest form of other taxes were those on houses, carts, and dramatic entertainments.

The income of the Mandalay Municipality in 1888-89 amounted to Rs. 3,77,670, nearly one-half of which was raised by a house-tax graduated according to size and value. A hospital and a dispensary were maintained, fire stations were established and four manual engines bought, and a survey of the town was made. Many of the other Municipalities, however, were so poor that they had to be relieved of the cost of police establishments.

In 1890 there were seventeen Municipalities. Their total income, excluding Mandalay, was Rs. 2,00,180. Public safety, health, and convenience absorbed the bulk of the funds, none of which closed with a dangerously small balance, whilst in all the financial condition had improved. In 1891 the Myinmu Municipality was abolished, and shortly afterwards that at Yesagyo followed.

The following statement shows the opening and closing balances and the income and expenditure of the Upper Burma Municipal Funds during the year 1891-92:—

Town.	Opening Balance.		Income.		Expenditure.		Closing Balance.	
	1890-91.	1891-92.	1890-91.	1891-92	1890-91.	1891-92.	1890-91.	1891-92.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Mandalay	1,43,376	76,059	3,69,535	3,35,990	4,36,852	3,69,768	76,059	42,281
Bhamo	12,718	16,722	9,252	15,517	5,248	18,137	16,722	14,102
Shwebo	1,074	3,232	13,470	12,777	11,312	15,770	3,232	239
Sagaing	3,081	5,752	13,229	33,051	10,558	31,575	5,752	7,228
Ye-u	683	4,753	7,285	17,818	3,215	18,973	4,753	3,598
Mônywa	4,830	7,287	9,411	14,832	6,954	15,333	7,287	6,786
Myingyan	2,357	5,131	17,629	14,494	14,855	14,602	5,131	5,023
Yesagyo	851	7,976	9,116	3,384	2,041	9,722	7,976	1,638
Pagan	1,683	2,134	4,774	3,413	4,323	5,146	2,134	401
Pakôkku	5,300	5,168	20,692	37,011	20,824	35,183	5,168	6,996
Minmu	3,039	1,253	9,502	11,452	11,288	9,380	1,253	3,325
Salin	3,859	9,332	15,507	15,059	10,034	10,386	9,332	14,005
Taungdwingyi	2,842	5,857	8,414	20,056	5,399	18,248	5,857	7,665
Kyauksè	2,199	7,643	11,832	10,611	6,388	17,521	7,643	733
Yamèthin	3,825	1,511	10,532	13,891	12,846	10,271	1,511	5,131
Pyinmana	7,949	16,122	68,759	36,079	60,586	40,885	16,122	11,316
Myinmu	1,437	...	2,536	...	3,963	...	...	...
Total ...	2,01,103	1,75,932	6,91,515	5,95,435	6,26,686	6,40,900	1,75,932	1,30,467

The decrease in income from Rs. 6,01,515 to Rs. 5,95,435 was caused mainly by the fall in the receipts of the Municipalities of Mandalay and Pyinmana.

In the following statement are shown the total receipts of Municipalities and their distribution under the principal heads :—

Head of receipt.	1890-91.	1891-92.
	Rs.	Rs.
Taxes on houses and lands	2,24,218	1,91,903
Taxes on animals and vehicles	1,007	1,837
Tolls on roads and ferries	2,203	1,815
Conservancy-tax	...	...
Lighting-rate	...	...
Water-rate	...	...
Total income from taxation ...	2,27,428	1,95,555
Fines	22,939	22,220
Miscellaneous	3,05,488	3,33,621
Grants from Provincial and Local Funds	...	2,682
Debt accounts	45,660	41,357
Total ...	6,01,515	5,95,435

In 1897 there were fourteen Municipalities in Upper Burma, that of Ye-u having ceased to exist in 1896. The incidence of taxation for the year was As. 15-6, as compared with As. 13-5 for the previous year, per head of the population. The incidence of income fell from Rs. 2-15-3 to Rs. 2-11-5. The former rate was highest in Mandalay (Rs. 1-3-6) and Pakôkku (Rs. 1-1-2), and lowest in Taungdwingyi (As. 4-4) and Bhamo (As. 6-5), and in four cases it was under eight annas. The total expenditure for the year in Upper Burma was Rs. 7,65, 400 as against Rs. 7,86, 819 in the previous year. Besides the building of markets, and provisions for the public safety, much has been done in the way of building hospitals and dispensaries, improving the water-supply, lighting the streets, and in conservancy and sanitation. The Upper Burma Municipalities are debited with the cost of police establishments and in consequence, except in Mandalay and Sagaing, little is expended on public education.

Police.

Some account of the Police, Military and Civil, has been given in the historical chapter. The numerous and constant calls on the services of the Police in Upper Burma has led to much reform and improvement in the force of the province generally. A regular training school has been established at the headquarters of every district. Every recruit is first sent to this school, and is kept there for six months, or until he has passed an examination showing that he has acquired a fair knowledge of his duties. The whole district force, moreover, is brought in to the headquarters school in batches for a month's training in

each year. A most important measure in the improvement of the efficiency of the Police was the introduction in 1891 of beat patrols. The system provides for the division of the whole country into beats or suitable village groups. A constable is told off to each of these beats and is required to visit it at stated intervals for the purpose of collecting information about criminals, of watching suspicious characters, and of generally acqainting himself with all matters of Police interest in his beat. The Village Police in Upper Burma consist of the *gaungs* and other assistants of the village headmen. The headmen in Upper Burma have, as a rule, a better position and more influence than the corresponding officers in Lower Burma, and the relations between them and the regular Police appear to be generally satisfactory. Since 1892-93 large reductions have been made in the number of the Upper Burma Civil Police, and the decrease in crimes of violence has been constant. They have now been for some years very much fewer than in Lower Burma. The slight increase in 1896 was doubtless owing to the scarcity which prevailed in several districts :—

	1894.	1895.	1896.
LOWER BURMA.			
Murder by dacoits	18	18	4
Murder by robbers	16	4	15
Murder by poison	2	3	...
Other murders	206	177	181
Attempts at murder	24	23	23
Culpable homicide	60	54	54
Dacoity	223	134	82
Preparation and assembly for dacoity	7	2	3
Robbery with hurt	110	105	101
Other robberies	234	189	157
Housebreaking	34	15	25
Total ...	934	724	648
UPPER BURMA.			
Murder by dacoits	7	5	5
Murder by robbers	7	8	...
Murder by poison	3	1	3
Other murders	55	57	54
Attempts at murder	3	4	5
Culpable homicide	6	13	9
Dacoity	57	28	37
Preparation and assembly for dacoity	3	1	...
Robbery with hurt	31	44	48
Other robberies	113	65	89
Housebreaking	11	1	4
Total ...	296	227	254
Total for province ...	1,230	951	902

Prisons.

There are two second-class central jails, one third class district jail, and eleven fourth class district jails in Upper Burma. The jail population continues to increase, but a large proportion of the increase in 1896 was due to vigorous action under the preventive sections of the Criminal Procedure Code, which accounted for 3,913 imprisonments, against 2,898 in 1895.

The figures for the whole province are given as follows in the Administration Report for 1896-97 :—

The number of direct commitments to prison during 1896 was 19,708 against 18,165 in 1895. Transfers to undergo sentence rose only from 2,646 to 2,868 and were less numerous than was expedient, under the circumstances of overcrowding. The number of Europeans and Eurasians who were imprisoned showed a further decline and stood at 179 for the year, but the improvement was all due to the Europeans, and, among them, it was mostly due to the British regiments. Among other religions or race-classes only the Hindus and Sikhs showed a decrease. All age-classes in both sexes, except women over 60, participated in the general increase. Among women only widows, and among men only public servants and persons employed in mechanical arts, manufacturing and engineering operations, withstood the general infection. In the classification according to length of sentence the figures referring to sentences ranging from above six up to twelve months showed the largest increase, namely, from 2,594 to 3,344, but the increase in the total number of prisoners was shared by all classes and terms of sentence except simple imprisonment, transportation for a term and transportation for life. Cases of offences against the public tranquillity, false evidence, murder, rape, theft, extortion, robbery, criminal breach of trust, receiving stolen property, criminal trespass and housebreaking exhibited noticeable increases, while cases of aggravated assault, dacoity, misappropriation, mischief, and offences against special and local Acts showed a noticeable decrease. The inferences which might be drawn from these figures were, however, weakened by an increase from 700 to 1,244 of offences against the Indian Penal Code not specially classified, and these included cases of dacoity with murder, for which 15 men were during 1896 sentenced to death, while the existence in this class of 70 sentences of transportation or imprisonment for terms exceeding five years against 56 in the preceding year indicated that the decrease of sentences for simple dacoity from 276 to 173 was partially counterbalanced by an increase in sentences for the more serious form of that crime. The largest class of prisoners was those convicted of theft, who numbered 4,986 against 4,795 in the previous year. Next

in number came the persons imprisoned for failure to give security, who totalled 3,910 men and three women and were more numerous by 1,015 than in 1895. Out of 19,708 convicts admitted during the year of report, 2,951 had been convicted once, 848 twice, and 576 more than twice, before; the ratio of reconvicted prisoners showed a slight decline, upon which no inference could safely be founded. The courts classified 2,788 persons as "habituals" because they were convicted of offences punishable under Chapter XII or XVII of the Indian Penal Code with three years' imprisonment and had been previously convicted for an offence similarly punishable, and they classified 163 persons as "habituals" because they believed them to depend on crime as a means of livelihood or to have attained a peculiar eminence in crime. The number of prisoners who should have been classified as habituals on account of previous convictions, but whose previous convictions were not ascertained till their arrival in jail, was 37, being 31 less than in the preceding year.

The problem of finding employment for prisoners was continually under the consideration of the Local Government and the Inspector-General. The enormous proportion of convicts to the total population, which rose in 1896-97 to about 1 in 554, increased the difficulty of arriving at a solution. Orders have been issued that jails must be employed to the fullest possible extent to meet the wants of Government departments in furniture, clothing, food, and other articles. The net cost per head of the prisoners was Rs. 34-14-0 as compared with Rs. 28-8-0 in 1895-96, chiefly owing to the high price of paddy, but a large amount of prisoners' labour was employed upon jail extensions.

Communications and public works.

The only communications which existed in Upper Burma at the time of the annexation were the waterways. There were unmade cart-tracks which led from village to village in every direction all over the country. These were open all the year round in the sandy tracts, but in the alluvial districts, where they were most wanted for trading purposes, they were closed almost universally from June to November. During these months only the foot-paths and pack tracks were available, and these were often almost useless for loaded animals, owing to the swamps and stretches of paddy-land they passed over. None of the cart-roads were metalled, and no wheeled conveyances except the country carts could pass over them at any time of the year. The solid wooden wheels cut deep ruts, so that in many places one wheel would go along as much as a foot or eighteen inches lower than the other. For purposes of trade therefore it might be said that no roads whatever existed. Even in Mandalay itself the roads were mere cleared and

levelled surfaces. The first work of the occupation was to reform, re-bridge, and metal about fifteen miles of road in the capital; at the same time various district roads for the purpose of connecting outlying places with the water-ways were taken in hand. At the close of the first rains much attention was paid to the clearing of tracks, one hundred feet wide, from post to post, and in other places where they were necessary for the passage of troops. These jungle clearings, though they were not strictly speaking public works, did much to facilitate free movement, and were of great importance in the pacification of the country. Otherwise, in the first year of the occupation, the chief public works were the construction of barracks and hospitals for European and native troops at the various headquarters, besides officers' quarters and Commissariat buildings, as well as block-houses, and defensible police posts, and the commencement of a large jail in Mandalay. Similar works were continued in the years immediately following, when buildings were required for the large military police force and jail buildings and court-houses were necessary all over the country, while roads were taken in hand to Maymyo and the Northern Shan States from Mandalay; to the Ruby Mines from Thabeikkyin; from Myingyan, through Mahlaing, Meiktila, and Hlaingdet, to Fort Stedman and the Southern Shan States; besides others from Tigyaing to Kawlin; from Kyaukmyaung to Shwebo and Ye-u; between Mônywa and Myin-mu; and from Minbu to Ngapè.

Railways.

But the most important of the works was the Railway from Toungoo to Mandalay, which was commenced within a year of the annexation of the country, as the result of a very able memorandum by Sir Charles Bernard, then Chief Commissioner of the Province. This conclusively proved, not only for Burma, but for every landlocked country, the greatly superior advantages of a Railway over a trunk road in regard to the extent and value of the benefits conferred upon the country and upon the Government, the promptitude with which these benefits are realized from a strategical, financial, and commercial point of view, and the acceleration of the eventual gain to the public treasury. Sir Charles Bernard says:—"It has been pointed out that "a Railway is a very costly affair, that neither India nor Burma can "afford a rupee of avoidable expenditure; that in most countries "roads precede railways, and that there are no roads in Upper "Burma; and it is suggested that it would be better to spend such "moderate funds as may be available on cross-roads to the chief "centres of trade, and on a trunk road that might hereafter be con-"verted into a railway. There can be no doubt but that the Govern-"ment are, under present financial circumstances, bound not to em-

"bark on costly work that can be avoided or postponed. But I "believe that no system of roads that can be constructed within the "next thirty years, and that no trunk road under any circumstances, "can confer on the province the commercial, political, military, and "administrative advantages that will be produced by the proposed "railway. And I venture to hope that within ten years the proposed "railway will, instead of being a burden, be a direct source of revenue "to the province, such as no system of roads, or trunk road, can ever "be. It is quite true that roads are greatly needed in Upper Burma. "Outside a few towns and villages there is not a mile of made road or "a single bridge. Carts ply by devious tracts across rice-fields, "through jungles, over stony up-land, and through muddy streams. "But the tracks are so rough and difficult that cart-hire in these re-"gions comes to six and seven annas per ton per mile during the five "months for which the tracks are passable. During seven months "the tracks are nearly impassable; carts, if they ply at all, carry light "loads; and the cost of carriage comes to something over one rupee "per ton per mile. No doubt the rates would be reduced if good "metalled and bridged roads were made; but such roads would cost "about Rs. 12,000 a mile and even then cart-hire would come to "about four annas per ton per mile. Water-carriage over any of the "routes from Pyinmana to Kyauksè is quite impossible, save after "great outlay on the canals, locks, and reservoirs. Along the line of "the proposed railway there are vast expanses of culturable waste, "besides considerable areas which yield a surplus of rice, oil-seeds, "cotton and pulse, beyond the wants of the local population. It is "manifest that great additional value would be given to the cultivat-"ed lands, and much impetus would be given to the clearing of waste "land, if the cost of carrying surplus produce to market were reduced "from an average of eight annas to the average of one anna per ton "per mile.

"The roads that are wanted are cross-roads to the Irrawaddy "river, or to some other main line of communication, whereby pro-"duce can be carried to the sea-board, and English goods can be "transported into the interior. For the Central and Western dis-"tricts the Irrawaddy river constitutes an excellent commercial "artery. But along the base of the Shan hills there is a great "land-locked tract, distant from sixty to one hundred miles from the "Irrawaddy and separated from that river by the broken upland "country which forms the continuation of the Pegu Yoma hills "and culminates in the Pôppa peak, over four thousand feet above "the sea. At present very little surplus produce gets across to "the river from this tract, and vast areas of fertile land that "might be cultivated are left untilled because there is no outlet for

PLATE XXXV.



Photo-Block. Survey of India Offices, Calcutta, 1899.

A KACHIN HOUSE.

"the produce. Goods for, and a small amount of costly produce "from, the Shan States find their way to Mandalay on the north, or "to Toungoo from the south, whence there is good water or land "communication to the sea-board. Hardly any Shan trade in piece-"goods, salt, or hardware, finds its way through the passes that "debouch opposite Yamèthin, Hlaingdet, and Wundwin, because "there is no means of reaching the Irrawaddy from these passes.

"A trunk road from Toungoo along the foot of the Shan hills to "Mandalay would be a great boon to the country; and it would "make the work of administration easier. But such a road, about "240 miles long, would cost about thirty-lakhs of rupees, and it would "not be finished, by annual grant from revenue, under six or eight "years. Even then such a road would leave about seven large "streams unbridged. Experience in India shows us that bridges "over broad streams are never made for mere roads, though, of "course, they have to be made for railways. The presence of un-"bridged streams on every section of the road would tend to make "the road practically impassable for wheeled traffic sometimes for "days together. Some of these streams, notably the Sinthe, the "Swa, and the Samôn, are such that ferries can hardly take the "place of bridges. The occurrence of broad, sandy riverbeds, even "in the dry season, at intervals along a trunk road, regulates the "weight carried by each cart, and operates greatly to enhance the "cost of carriage, by reducing the weight that can be put behind "each bullock. Practically a trunk road of this kind would get no "through traffic at all, though it would be of great use to trade on the "sections near Toungoo and Mandalay, and would save a good deal "of intermediate traffic from place to place. The cost of carrying "produce along such a road would be about four or five annas per "ton per mile, which would effectually prevent bulky produce from "moving more than fifty or sixty miles by such a route. For pur-"poses of military defence such a trunk road could not compare with "a railway; for troops and supplies would take ten times as long to "travel and would cost five times as much as by railway. With a "road it would take ten days at least to send succour from Manda-"lay or Toungoo to Yamèthin and a great number of carts would be "required, whereas by rail troops and supplies could be sent in six "or eight hours. Similarly, Kyauksè could be re-inforced from Man-"dalay by rail in a couple of hours; whereas by road troops could "cover the distance in about three days, if they had plenty of car-"riage, and provided ample store of boats were collected at the "Myitngè ferry.

"It has sometimes been said that a trunk road is a first step to-"wards a railway, which can be laid at leisure on the road. But

"experience in India has, I am told, proved it to be a mistake to at-"tempt to utilize a road for a railway. On the Lahore and Pesha-"wur road a railway was laid for many miles some years ago, but "the rails were taken up and laid elsewhere before the line could be "opened. Road bridges can never be suited to carry a railway, "and, if road curves and gradients are made to suit a railway, "the road immediately becomes very costly. At the very best a "road costing Rs. 10,000 a mile could hardly, on the route under "discussion, make a difference of Rs. 3,000 a mile in the cost of a "future railway, even if the road were wholly taken up for the railway. "If we made a trunk road from Toungoo to Mandalay in eight years "at a cost of thirty lakhs, the fact of such a great outlay having "been incurred would of itself deter Government from spending "money on a railway in the same territory. And I believe that such "a trunk road, instead of paving the way for a railway, would in "reality put off indefinitely the beginning of a railway between Lower "and Upper Burma.

"The financial merits of the two projects stand somewhat thus. "A trunk road from Toungoo to Mandalay, with the larger rivers "unbridged, might be finished in eight years at a cost of forty "lakhs, including interest and upkeep. Thereafter the road would "cost yearly one and two-fifths lakhs for upkeep and one and one-"fifth lakhs for interest on the capital. The road would yield no "revenue; and the indirect benefit to the country, to the people, and "to the Government would be confessedly less than one-quarter of "the indirect benefits conferred by the railway.

"At the end of eight years the railway would have cost, with in-"terest, less by net earnings, estimated at four per cent. the first "year after opening, three, two, one and a quarter, and three-fourths "per cent. in the following years, or eleven per cent. in all, a total "of 214¼ lakhs. At the end of the eighth year the railway, which "would have been open throughout for five years, would be paying "its way, and would not be costing the country a penny. It would "have been conferring the fullest indirect benefits on the country "for five years; and after the eighth year it would be earning a gra-"dually increasing surplus revenue. Further, by bringing on the "Lower Burma line an immensely increased traffic, the Mandalay "Railway would contribute to swell the surplus yield of the old "line."

Such demonstration could not help but prevail, and construction was commenced on sixty miles at the southern end of the line, and forty miles at the northern end towards the close of 1886-87, and by the close of the following year the earthwork throughout had been practically completed over the whole two

hundred and twenty miles, the bulk of the ballast had been collected, and good progress had been made with the bridge work. The line from Toungoo to Pyinmana, a distance of fifty-nine miles, was opened for public traffic in September 1888, and the railway was completed and opened for traffic of all descriptions on the 1st March 1889. The total outlay was £2,084,955. The passenger traffic was very heavy from the first, and for the Burma system of railways there was an increase of 14,852 tons in goods traffic, while the total receipts increased from £337,622 in 1888 to £469,026 in 1889. In the following year the increase in gross earnings was eight lakhs, and there has been a steady advance ever since.

Meanwhile a commencement was made on the Mu valley line. The surveys were carried out in the open season of 1888-89, and in December 1889 the actual work of construction was commenced from Sagaing. It was at first intended that the line should run from Sagaing to Mogaung, with a branch line to Bhamo, but the idea of the Bhamo branch line was soon given up, as the line was likely to prove unremunerative. Mandalay is connected with Sagaing by a short line *via* Myohaung and a steam ferry across the Irrawaddy. The section from Sagaing to Shwebo was opened to traffic on the 1st July 1891, but earlier in the year all work on the more northerly sections was stopped by the Wuntho rebellion. The net earnings on the section opened were for the first year Rs. 80,635. In 1892-93 the Myohaung to Amarapura Shore section was completed, and the Mu valley line was opened as far as Wuntho, a distance of one hundred miles. In 1893 also the Mandalay to Mandalay Shore suburban line was finished as well as a branch line from Meiktila Road to Meiktila, which had been undertaken as a famine relief work. On the 21st October 1895 the section of the Mu Valley railway as far as Mohnyin was opened, as well as a branch line to Katha, and onwards from Mohnyin to Mogaung goods traffic began on the 1st March 1896, and passenger traffic followed in the beginning of 1897.

The total length of line in the province thus open to traffic is 886¼ miles, and the section from Mogaung to Myitkyina, a length of thirty-seven miles, is under construction. It was opened to goods traffic early in 1898, but delays in the construction of the permanent bridge over the Mogaung river and the twice repeated destruction of the temporary bridge prevented it from being opened to passenger traffic within that year. Of the 886¼ miles actually open, 550 are in Upper Burma, and this mileage will be greatly added to when the Mandalay-Kunlông ferry line, now under construction, is completed. Alterations in the alignment, the amount of blasting to be done, which has all to be carried out by imported labour and in unhealthy

submontane tracts, and the fact that most of these difficulties are encountered at the very beginning of the line, have retarded its progress, but it seems probable that the plateau will be reached for goods traffic in 1898, that is to say, only a little over ten years from the time when there was not a single rail in Upper Burma territory. Branch lines contemplated in the Shan States will open up a country which, with such advantages, will prove not less productive than most parts of Upper Burma.

Roads.

While railways have thus been pushed on in all directions over the Upper Province, roads have not been neglected. The chief of these are the Ruby Mines road, the Northern Shan States road, and the Southern Shan States road.

The Ruby Mines road starts from Thabeikkyin on the Irrawaddy, whence it is 61¾ miles to Bernardmyo, and a branch road, twenty-one miles long, runs from Kabaing to Mogôk, the headquarters of the district. The road was opened to cart traffic in January 1890, and the cost of the main and branch roads combined had then been about seven lakhs. The necessary widening and metalling of the road, which is being carried on, will probably amount to another five lakhs.

The Maymyo-Lashio road opens up communications with the headquarters of the Superintendent of the Northern Shan States, and also follows one of the main trade routes from China to Mandalay. Two iron-girder bridges on this road prevented through cart communication being established till 1893. These are the bridges over the Chaungzôn stream, consisting of one span of eighty feet, carried on masonry piers with land spans of timber, and the bridge over the Nam Hsim, a stream near Hsi Paw, consisting of one span of eighty feet, carried on masonry piers, with one hundred and thirty eight running feet of land spans. The distance from Mandalay to Lashio is 177 miles. Except for portions of the section between Mandalay and Maymyo, it is unmetalled, and during the rains some stretches in lowlying country, especially near Ônmathi, are still impassable. The importance of this road will, however, be much discounted by the construction of the Mandalay-Kunlông railway.

The Southern Shan States road is really a road from Myingyan to Taunggyi and Fort Stedman, the headquarters of the Southern Shan States, but as far as main lines of communication are concerned it is really two roads, starting from Thazi or Meiktila Road Station on the Mandalay line. Fifty-two miles of the road cover the ascent to the Shan plateau, and the whole stretch from Myingyan to Fort Stedman is 182 miles. It was opened for cart traffic in

1890, and is being gradually metalled throughout its length. Much, however, yet remains to be done, for the traffic over this road is very considerable and increases steadily. The road is being extended to Möng Pawn in the Eastern States, and will eventually be carried to the Kaw ferry, whence a mule track runs to Kēngtūng. The distance from Fort Stedman to Kēngtūng by this bridle-path, long used by Chinese traders, and improved by the Public Works Department in 1895-96, is 269 miles.

These are the chief roads, but there are many others, metalled and unmetalled, leading to the river or to the railway, besides mule tracks in many directions in the Kachin and Chin Hills. The total length of road communication maintained in Upper Burma during the year 1894-95 was—

	Miles.
Metalled roads	198·8
Unmetalled, but raised and bridged roads	1,392·6
Other roads (fair-weather and temporary roads and bridle-paths).	1,311
Total ...	2,902·4

and in the succeeding year 342·38 miles were opened to traffic.

Thus in a country which in 1885 was characterized as "one vast military obstacle," communication is everywhere possible, and in many places can be carried on with some degree of speed and comfort.

Irrigation.

It was early seen that, if any practical use was to be made of the large existing, but mostly damaged, or useless, irrigation works in Upper Burma, it was necessary to place them under the charge of a special officer; as, with the multitude of public buildings which they had to construct, the Executive Engineers in whose divisions the several works lay could not give them the necessary attention. Accordingly, in 1892, an Irrigation Circle was formed and three Irrigation Divisions were opened out, while a fourth was added later. These were practically co-terminous with the civil divisions. The chief existing irrigation works in Upper Burma were—

(i) the Kyauksè irrigation system;
(ii) the Minbu irrigation system;
(iii) the Nyaungyan and Minhla tanks in the Yamèthin district;
(iv) the Mu canal and connected works in the Shwebo district; and
(v) the Madaya canal in the Mandalay district.

Immediate improvements had been carried out in many of these places in 1890 and earlier, and in 1891 the famine relief works

allowed much to be done in this way. Besides affording wages and food to the inhabitants of the distressed districts, these works helped to safeguard the country in years of drought by storing up the rainfall and arranging for its economical distribution to the crops. Such works were largely undertaken in the Kyauksè and Meiktila districts, and consisted chiefly in repairing the embankments of old tanks and providing escape channels and sluices; weirs of stone crib-work were also built, the water held up by them being taken on to the cultivation by canals dug for the purpose. The Irrigation Circle, when it was formed, devoted its chief attention to survey work, to the maintenance of existing irrigation works, and to the restoration of old tanks in many places throughout the country, which the Burmese Government had allowed to become practically useless. The surveys carried out have been the following:—

(*a*) Surveys in connection with the Mandalay and Shwetachaung canals. Work on the Mandalay canal, estimated to cost Rs. 32,32,804 has begun. This canal will irrigate 72,000 acres, and improvements on the existing Shwetachaung canals will add over 13,000 acres.

(*b*) Surveys in connection with the Shwebo canal. The probable cost will be Rs. 50,00,000 and the area irrigated 130,000 acres.

(*c*) Surveys for canals from the river Môn in the Minbu district. These canals will irrigate 63,600 acres.

(*d*) Surveys for re-modelling the Man river canals in the *Minbu* district.

(*e*) Surveys for the Ye-u canal. This canal will take off from the same weir on the Mu river as the Shwebo canal, but on the right bank.

When these works are completed, the area of country which will be comparatively independent of rain in years of drought will be enormously increased.

Besides these a very great number of barracks, court-houses, jails, hospitals, administrative buildings, treasuries, post and telegraph offices, and bazaars have been built all over the country. Groynes have been constructed in various places in the Irrawaddy to prevent or minimize the formation of sand-banks, and much has been done to improve the navigation of the Chindwin and Mogaung rivers by the blasting of rocks and the removal of snags.

Telegraphs.

Telegraph lines existed in the time of the Burmese Government, but they were badly constructed and badly worked, and the line from Mandalay by the Natteik Pass to Möng Nai (Monè) in the Shan States was probably de-

stroyed during the reign of King Thibaw. For all practical purposes it had ceased to exist when we occupied the Shan States. The establishment, improvement, and extension of telegraphic communication were therefore among the earliest matters to which attention was directed after the fall of Mandalay. The first object was to restore and maintain telegraphic communication between Mandalay and Rangoon. The old line from Mandalay to the Lower Burma frontier had to be re-constructed and steps taken for its regular maintenance. This was done notwithstanding frequent interruptions, occasioned by dacoits and, at times, by natural causes. A second wire was laid to Myingyan, and before the end of 1886 it was found necessary to prolong this to the old frontier line. Another old line from Minhla to Taungdwingyi was put in order and maintained, while a new line was run through from Myingyan to Toungoo. This was, however, persistently interrupted between Yamèthin and Pyinmana and was of little service until 1887; other lines begun or completed in the first year of the occupation were those from Mandalay to Shwebo and Ye-u and from Mandalay to Bhamo. With succeeding years the extension of lines went on continuously. Lines were carried up to the Southern Shan States, the Chin Hills, and the Northern Shan States, and in 1890 there were 3,523 miles of telegraph wire with forty-eight telegraph offices. The line mileage at the end of 1897 was 2,145·8 and the wire mileage 4,454·44, besides 10·13 miles of cable, but this does not include the Southern Shan States subdivision, which has been transferred to Lower Burma, as have also the lines in Yamèthin, Magwe Meiktila, and Myingyan.

Post Office.

A post office was established in Mandalay in the time of Mindôn Min, and was retained even after the withdrawal of the British Resident, for the despatch of letters by the Irrawaddy Flotilla steamers, but there was no permanent arrangement whatever for the despatch of letters from the capital to the districts. Royal letters were sent by special messengers, or were forwarded from village to village, the headmen being responsible for their safe despatch. Private letters, if they were sent at all, had to go as best they could.

On the occupation of Mandalay two post offices were opened at once, one in the Palace, the other on the river bank, and shortly afterwards a head post office was opened in the merchants' quarter, but was burnt in one of the numerous fires. Very early, post offices were also opened at Bhamo, Myingyan, Minhla, and Pyinmana, and sub-post offices in other places, while special arrangements were made for the despatch of letters to each detachment of troops. An enumeration of postal articles delivered in Upper Burma was made

during the second week in February, which showed that the number of letters delivered during that period was 21,850, a vivid suggestion of the strain suddenly thrown on the department. A satisfactory feature of the post office administration was the readiness which the Burmese showed to avail themselves of postal facilities. Before the annexation hardly any Burmese correspondence passed though the post office. At the end of 1886 it was believed to have ranked next in amount to English correspondence, notwithstanding the large number of sepoys in the country.

For a time the more distant postal lines such as those from Thabeikkyin to the Ruby Mines, Mandalay to Lashio, and Hlaingdet to Kônni and Fort Stedman, were left under the control and management of the local civil officers, but in time they were one by one taken over by the department.

The following is a comparative abstract of the different kinds of imperial postal lines :—

Year.	Railway lines.	Bullock and horse line.	Runners and boat line.	Steamer line.	Total.
	Miles.	Miles.	Miles.	Miles.	Miles.
1886-87 ...	327	64	344	2,650	3,385
1887-88 ...	419	409½	785	3,407	5,020½
Increase ...	92	345½	441	757	1,635½

The following abstract shows the business of the post office in the same two years :—

Year.	Letters, including post-cards.	Newspapers.	Parcels.	Book, and pattern packets.	Total.
1886-87 ...	6,902,220	1,063,140	81,484	174,044	8,220,888
1887-88 ...	8,874,892	1,458,340	100,360	243,724	10,677,316
Increase ...	1,972,672	395,200	18,876	69,680	2,456,428
Percentage of increase.	28·5	37·1	23·1	40·0	29·8

There was an increase in the same period of £395,545 in issues and £80,926 in payments of money-orders.

Throughout there were very few cases of interference with, or robbery of, the mails, though on most lines the runners went unguarded.

The increase has been steadily maintained, notwithstanding the withdrawal of troops, as the following figures will show :—

Year.	Letters and post-cards.	Newspapers.	Packets.	Parcels.	Total.
1891-92 ...	9,980,730	1,946,466	626,652	174,339	12,728,187
1892-93 ...	11,106,767	2,018,658	787,670	176,529	14,089,624
1893-94 ...	12,245,854	2,186,975	988,654	186,697	15,608,180
1894-95 ...	11,872,955	2,136,684	1,112,650	202,523	15,324,812
1895-96 ...	11,886,016	1,962,501	1,289,571	188,914	15,327,002

The extension of postal lines is shown in the following table :—

Year.	Railway.	Mail carts and horses.	Runners and boats.	Steamers.
	Miles.	Miles.	Miles.	Miles.
1891-92	702	561	3,129¾	4,802¼
1892-93	716½	628¼	3,536¾	4,870¼
1893-94	732	612	3,540	4,858
1894-95	799	607¼	3,996¾	4.766¼
1895-96	833¼	363¼	4,201¼	4,893¼

In 1886 there were 97 post offices, in 1896 there were 279. Transactions in money-orders and in the number of post office savings banks have correspondingly increased. The value of money-orders issued in 1895-96 was Rs. 1,89,36,374 and of money-orders paid Rs. 7,03,419, while the number of savings banks was 165, with 41,661 accounts open, representing balances of Rs. 59,45,876.

Health.

The control of the Civil Medical Department of Upper Burma was until 1888 under the Deputy Surgeon-General of the Burma Field Force at Mandalay. A large number of Military Medical Officers were then at hand whose services were available for civil work, as a collateral charge, in addition to their military duties. In the latter part of 1888, however, the department was amalgamated with that of Lower Burma. After some difficulties it was decided to classify the Upper Burma Civil Surgeoncies as far as possible after the system adopted in Lower Burma. Mandalay and Mingyan, as the two most important stations and the sites of two large jails, were therefore reserved for Covenanted Military Officers. Of the remaining twenty stations it was decided that any four should be held by Covenanted Civil Surgeons, five by Military Surgeons, and the remaining eleven by

Warrant Officers, the particular stations allotted to officers of each class being left unfixed, to be determined from time to time according to the exigencies of service. Twenty-two Assistant Surgeons were sanctioned, but the full number was never available, and Assistant Apothecaries were employed in their stead. As the Assistant Surgeons were discontented and anxious to return to India, they were gradually withdrawn, and at the end of 1889 only three of this class remained in Upper Burma. Similarly very great difficulty was experienced in recruiting Hospital Assistants for Burma, and for some time the strength was never up to scale.

Nevertheless civil hospitals were maintained at all headquarter stations, and small dispensaries for out-patients were opened at subdivisional stations and elsewhere, whenever the services of Hospital Assistants doing duty with the Military Police could be made available. The number of headquarters and other dispensaries open at the end of 1889 was thirty-six. There were nine vaccinators, four of whom were paid by the Mandalay Municipality. Occasionally, owing to the influence of inoculators, opposition was experienced, but in most districts the people readily accepted vaccination, and the Burmans soon began to resort in considerable numbers to the dispensaries. In 1891 the total number of Burman patients was 84,215 against 59,811 in 1890. Similarly the number of vaccinations, which in 1889-90 was only 29,707, rose in 1892-93 to 77,991. The number of dispensaries did not increase rapidly, as it was decided that district funds in Upper Burma should be reserved for roads and other like objects, and should not be charged with the maintenance of dispensaries; nevertheless the number of dispensaries increased to 50 in 1895 and to 53 at the end of 1896, including new establishments at Kēngtūng and Sima.

Peculiar to Upper Burma is the high proportion of admissions to hospital on account of eye diseases. These amounted in 1896 to about 15 per cent. of the total admissions.

Gôitre is remarkably prevalent in the Shan and Chin Hills, in the sub-montane tracts, and the Bhamo and Myitkyina districts, while the rest of Upper Burma, like Lower Burma, is almost free from it. Malarial fever is much more prevalent in Upper than in Lower Burma. To combat this the sale of pice packets of quinine was brought into operation towards the close of 1895. Malarial fever was by far the most prevalent disease among the patients who resorted to the civil hospitals. In the year 1895 between one-fifth and one-sixth of the aggregate number of admissions for the whole province was due to this cause. The proportion in each portion of the province has, however, declined latterly, and Arakan maintains its character as the most malarious part of the province. In 1895

the mortality from fever alone was nearly one-half of the aggregate mortality of the province from all causes, and bowel-complaints came next. Under the two heads together there were, in 1895, 56,843 deaths, the aggregate number of deaths from all causes being 101,160. It is noticeable, however, that, whereas the mortality from fevers is shown as only 7·57 per mille in towns as compared with 11·08 in rural circles, the ratio of deaths "from all other causes" is nearly twice as high in towns as in rural circles. From this it may perhaps be inferred that much of the mortality in rural circles is ascribed to fever owing to imperfect diagnosis.

Six of the dispensaries in Upper Burma provide relief for out-patients only. Several of the civil dispensaries are merely annexes to police hospitals, the medical officers of which find time to treat the sick of the country in the neighbourhood of the police post. The aggregate number of civil patients, in-door and out-door, treated in Upper Burma hospitals, rose in 1895 from 184,320 to 236,529. It is a source of satisfaction that the general increase was simultaneous with some rise in the proportion of women and children treated. It is noteworthy that in Upper Burma the attendance of in-door patients, which had risen steadily from year to year up to 1892, from that year onwards fell off slightly, and in 1895 was only 9,932 as compared with 10,840 in 1892. This falling off is not due to want of increased accommodation, for the number of beds has been raised considerably, and in most of the Upper Burma hospitals is now in excess of the daily average number of in-patients. In 1892 the proportion of in-door patients to the aggregate number treated was one to fifteen in Upper Burma, while in 1895 the proportion was one to twenty-four. This seems to be due to the fact that in 1892 and previous years the wards of the civil hospitals were in many cases filled with "police cases" and sick men of the civil police.

The number of military police hospitals open at the end of 1896 was 85, seven less than in the previous year. The year was rather more sickly than 1895, admissions to hospital numbering 19,302, and deaths 196. On the other hand, the daily average number sick (625) was lower than in 1895. The Upper Chindwin was, on the whole, the most unhealthy district, and the frontier battalions generally were the least healthy. The prevalent diseases were fevers (8,800) and dysentery and diarrhœa (1,929). The force enjoyed a complete immunity from small-pox.

At the close of 1895 there were ten railway dispensaries in Upper Burma, and 35,905 patients were treated, none of whom were in-door patients.

The aggregate expenditure on civil hospitals in Upper Burma rose from Rs. 1,02,608 in 1892 to Rs. 1,25,307 in 1895. The Im-

perial share was Rs. 59,481 in 1892 and Rs. 55,251 in 1895. There has been a progressive decline in the share of the expenditure in Upper Burma dispensaries thrown upon Government. During the three years there was an increase of charitable subscriptions from Rs. 7,456 to Rs. 9,807. Subscriptions are devoted exclusively to the charitable purpose of providing additional comforts for the sick, and care is taken that they are not diverted to meet the ordinary expenses of maintenance. In almost all cases the subscription funds are administered by medical officers, subject to the control of the Dispensary Committees, on which Europeans and natives are associated.

Education.

The following is taken from Mr. H. L. Eales' Report on the census of 1891:—

"Compared with other Indian provinces, and even with some of the countries of Europe, Burma takes a very high place in the returns of those able both to read and write. Taking the sexes apart, it will be seen that, although owing to causes which will be referred to hereafter, women fall far behind men in Burma in the matter of education, still women are better educated in Burma than in the rest of India, though compared with the returns of the European countries they fall far behind.

"The following comparative statement shows the average number of literates and illiterates in 1,000 of each sex in Burma, in the other provinces of India, and in various European countries and English colonies. For the purpose of this return those under instruction are classed with literates, as the distinction between learners and literates is not preserved in most countries outside of India:—

Province or country.	Learning and literate.		Illiterate.	
	Male.	Female.	Male.	Female.
Burma	450	29	550	971
Upper Burma	462	15	538	985
Lower Burma, 1891	443	38	557	962
Lower Burma, 1881	461	36	539	964
Assam	47	1	953	999
Bengal	87	3	913	997
Bombay	112	7	888	993
Central Provinces	47	2	953	998
North-Western Provinces and Oudh	58	2	942	998
Madras	138	9	862	991
Punjab	63	2	937	998
India	91	4	909	996
Ireland	554	501	446	499
Italy	377	236	623	764
Austria	521	467	479	533
Ceylon	269	29	731	971
Victoria	755	755	245	245
New South Wales	688	667	312	333

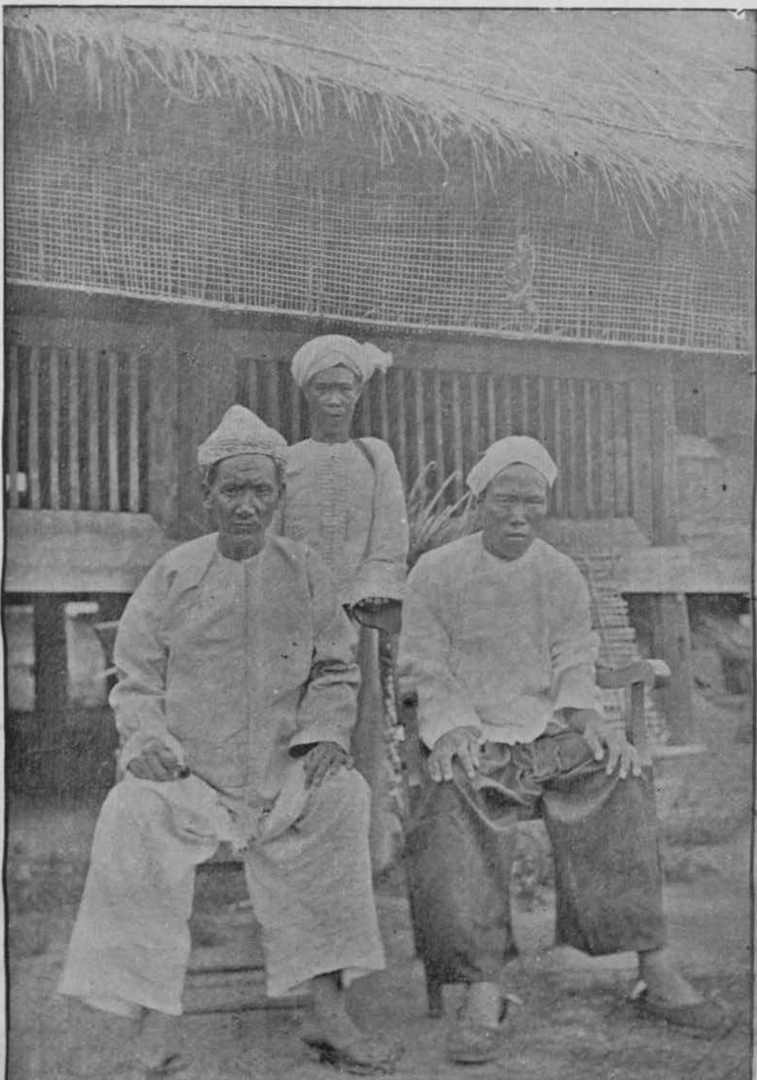


Photo.-Block. Survey of India Offices, Calcutta, 1899.

HUI HUI OR PANTHES.

"The returns of literates and illiterates are not included in the English and Scotch census schedules.

"It will be seen that Burma holds a high place in this table and that apparently there has been a retrogression in the education of the inhabitants of Lower Burma since 1881, and that, so far as males are concerned, Upper Burma is more literate than Lower Burma. If, however, we show literate and learning apart, we find that the high position held in 1881 by Lower Burma is in great measure due to the astonishing returns of those "under instruction." The following statement shows the number of males and females in 1,000 of each sex in Upper and Lower Burma divided into classes of learning, literate, and illiterate in 1891 contrasted with the returns of 1881 in Lower Burma:—

Province.	Learning.		Literate.		Illiterate.	
	Male.	Female.	Male.	Female.	Male.	Female.
Burma, 1891	59	5	391	24	550	971
Upper Burma, 1891 ...	70	2	392	13	538	985
Lower Burma, 1891 ...	52	7	391	31	557	962
Lower Burma, 1881 ...	108	18	353	18	539	964

"We have only to return to the report of 1881 to find out that the return of those under instruction was admittedly incorrect, and this is confirmed as much by the disproportion in the return between learning and literate in 1881 as by the return of 1891. For instance we find that female scholars in 1881 were most numerous in the Kyaukpyu district, yet the ratio of 396 females under instruction out of every 10,000 enumerated is, as Mr. Copleston remarks, curious, since there were only 69 out of the same number who could read and write. The explanation given was that the words "under instruction" were understood to mean that the parents of the child "intended at some time or other to send the infant to a school or monastery." In comparing the state of education prevailing in Lower Burma at the beginning and end of the last intercensal period we must, therefore, exclude from our calculations those returned as learning and restrict ourselves to the return of literates.

"Before discussing in detail the returns in Burma of education distributed by age, periods, and religions, it may be considered necessary to explain why Burma should hold the position it does in regard to the literacy of its inhabitants. Although Upper Burma has been so recently annexed, and although it has been brought under the control of the Director of Public Instruction within the last two years, a perusal of the Imperial Table IX shows that, though in female education it is slightly behind, yet, as regards the number of males under instruction and able to read and write, it ranks higher than Lower Burma.

"On this point Mr. Copleston's report contains a very interesting comment:—

"'It is worth noting perhaps that it is the districts which (the Birthplace tables show) receive large numbers of immigrants from Upper Burma

that the proportion of males able to read and write is the greatest. Thôngwa and Thayetmyo stand second and third if the districts are arranged either by the proportion of educated men to the total males or by that of persons born in Upper Burma to the total population. It is possible that the natives of the Kingdom of Ava, where the *pôngyis* maintain their hold with a firmer grasp than they do here, are already on the average better educated than the Burmese of the English province.'

"Our present census shows how shrewd this remark was. But Mr. Copleston omitted to take into consideration the fact that the greater proportion of immigrants from India which is to be found in the lower province is undoubtedly one of the causes of the general state of education in Lower Burma not being much higher than that of the upper province. Most of our Hindu coolies are illiterate, and the birth-place returns of 1891 show that, while in Lower Burma there were 237,589 persons born in India, there were only 40,423 persons in Upper Burma who made a similar return. Still the fact that Upper Burma can boast of so many males who are literate, or are under instruction, proves that there must be a large number of indigenous schools there. If we leave out of our calculation the number of children under five years of age who are perforce too young to be literate, we find that in Lower Burma 510 are either literate or learning, and 490 are illiterate, out of every 10,000 males, while in Upper Burma 532 are either literate or learning, and 468 are illiterate. Here the divergence is still wider and more in favour of Upper Burma. The explanation of these figures must be sought in the returns of the uneducated, distributed by the religions they profess.

"The annexed comparative statement shows the degree of education prevailing amongst every 1,000 persons of each sex who profess one of the five chief religions of the province. A deduction is allowable of all those who are under five years of age from the total, as children of this age may be presumed, in Burma at least, to be mostly, if not entirely, below school age. They are of course included in the return of illiterate; accordingly, in making the comparative statement shown below, in the case of the illiterate the number under five years of age is subtracted from the divisor as well as the dividend, and in the case of learning and literate from the divisor only:—

Religion.	Illiterate.		Learning.		Literate.	
	Male.	Female.	Male.	Female.	Male.	Female.
Buddhist	443	970	74	5	483	25
Nat-worshippers	922	997	6	1	72	2
Hindus	757	960	13	8	230	2
Mussulmans	746	961	25	9	229	32
Christians	471	723	79	51	450	30
						226

"Amongst males Buddhists are on the whole better educated than any of those who profess the other religions shown in this table. The *nat*-worshippers, as might be expected, are the most illiterate. Christians, who in-

clude many Karens who have but recently been converted from *nat*-worship, rank lower than Buddhists in males, but show a decided improvement in the number of females under instruction and literate. Hindus and Mussulmans are next to *nat*-worshippers the worst educated, but they show proportionately a higher degree of education than is found in any of the provinces of India. This is due, in the case of Mussulmans especially, to the large numbers of native Arakanese that have been returned as belonging to this faith. But the chief reason is no doubt the fact that a large proportion both of Hindu and Mussulman immigrants is drawn from the trading classes. It stands to reason that voluntary immigrants in most cases are not the least enterprising and least intelligent part of the community from which they come. Referring to the census report of Lower Burma in 1881, we find that the same improvement is noticeable, so that there is every reason to believe that this difference in the literacy of our Indian immigrants is not due to the vagaries of enumerators or to the mis-statements of the enumerated.

"The fact that in Upper Burma the proportion of literates is nearly as high as, and the proportion of those under instruction even higher than, that of the corresponding classes in Lower Burma, is a clear proof that in primary education at least, the credit for the superiority of the Burman over the native of India is due to indigenous schools. The Director of Public Instruction in his report for the year 1890-91 speaks in terms of the highest praise of the Upper Burman *pôngyi*. How liberal-minded and enlightened some of these worthy monks are may be judged from the fact that U Ayeindama, a *pôngyi* of Sagaing, 'made his *upazin* (or probationer) become a layman in order to undergo training in the Moulmein Vernacular Normal School and afterwards, when he had obtained a teacher's certificate, to re-assume the yellow robe and re-enter the monastery as a trained teacher.' Nor is U Ayeindama the only example of this liberal-mindedness and zeal: 'U Naka, *Gaingdauk*, or Abbot, of Ava, was found teaching himself English and teaching, in addition, to his pupils that language, as fast as he proceeded with it. U Gunama, of Nabet, and U Adeissa, of Alagappa, of their own accord, procured copies of Stilson's Arithmetic and pressed the Deputy Inspector to remain in their *kyaung* a few days in order to give them lessons in fractions.'

"It must not be supposed that no difficulty was felt by these tolerant *pôngyis* in overcoming, not only the prejudices of their fellows, but their own natural distrust of innovations. A few influential *pôngyis*, resident at Mandalay, have shown hostility to this movement There are of course two schools, one composed of men who distrust the introduction of new studies that may wean the minds of their pupils to follow the new-fashioned ideas. The feeling of the *pôngyi* towards the certificated teacher, who teaches a system of geography hitherto unknown to Buddhist minds, is not without a parallel in England even in the 19th century. On the other hand, the average *pôngyi* is not merely an honest ascetic; he is, considering his education and environment generally, a shrewd observer. There is therefore another school to which men like U Ayeindama belong. To quote Mr. Pope's words 'the *pôngyis* see clearly that in their own interests and in the interests of their religion their only hope of retaining their power of moulding the minds of the young and of preventing the people of the future growing up more less without a faith, lies in taking advantage of the system

of education held out to them, in common with laymen, by the Government in the Educational Department.'

"Though this party is as yet not so influential as the other, there are good reasons for expecting that it will ultimately get the upper hand. Patience and tact will gradually overcome the not unnatural prejudices of the old-fashioned school. Time itself is on the side of the advanced school, and, if no attempt be made to force the system of education on those unwilling to receive it, the sooner will they turn round and ask for what they now reject. There is perhaps no more hopeful sign of the future of the country than this admirable foresight, which the *pôngyis* in Lower Burma have shown before, and which is shown at the present day by the *pôngyis* of Upper Burma. The worst service the conquerors of Burma could render the conquered is to take away their religion and give them instead nothing but a smattering of English, and Calcutta degrees. It is true that in Burma we have but few Burman Bachelors of Arts, but thanks to the *pôngyis* and to the tact of our previous and present Directors of Public Instruction, there is little fear that the *pôngyis*, who have in time past done so much to raise the tone of their fellow-countrymen, will be supplanted in their self-imposed task.

"In Statement A the distribution *per mille* of the total population of every district and division is shown under the three heads mentioned above. As this return does not show the ages of the population, Statement B is added as a contrast, as in this latter statement children under the age of five are deducted. The district in which amongst the males enumerated the largest proportion of literates is found is, strange to say, the Upper Chindwin district. This is due to the fact that the Shan States of Kalè, Taungthut, and Kanti were excluded from the regular census; otherwise, had the illiterate inhabitants of these States been included, the return of literates would have been proportionately much lower. The districts in which education is at its lowest ebb are, as in 1881, the Northern Arakan Hill Tracts and Salween. This is only what was to be expected, as the proportion of Burmans is lowest in these districts. The tables show two things, first that education, so far as the males are concerned, is very generally spread over the country, and, next, that few females outside of Rangoon are found among the literates. The cause of this want of education amongst women in a country where they are well-known to take an active share in the work of their husbands, not merely as farm labourers, but as traders and even as brokers, is only to be explained by the fact that since the mass of those who learn to read and write have acquired their education in the monasteries, girls, who are not allowed to attend these schools, are consequently debarred from enjoying the same facilities for education as are possessed by their brothers.

Female education in Burma is still almost entirely confined to schools, managed either by Government teachers or Christian Missionaries. It is, however, satisfactory to see that, whereas in 1881 there were only 18 women returned as literate out of every 1,000, the proportion in Lower Burma has risen to 31. The Burmans are becoming aware that education is good for women as well as for men, and there is every reason to believe that the number of literates amongst women will be much increased at the forthcoming census of 1901.

STATEMENT A.—*Comparative table showing the number returned as learning, literate, and illiterate out of every 1,000 persons of each sex in every district and division in Burma.*

District.	Learning.		Literate.		Illiterate.		Grade of district and division arranged by proportion of male literates.	Grade of district and division arranged by proportion of female literates.
	Male.	Female.	Male.	Female.	Male.	Female.		
Arakan—								
Akyab ...	25	2	267	17	708	981	29	17
Northern Arakan ...	...	...	49	...	951	1,000	35	36
Kyaukpyu ...	38	3	346	15	616	982	23	18
Sandoway ...	35	3	298	11	667	986	28	21
Total ...	28	2	284	16	688	982	VIII	V
Pegu—								
Rangoon ...	48	32	370	151	582	817	21	1
Hanthawaddy ...	52	6	459	37	489	957	7	5
Pegu ...	63	12	492	50	445	938	2	2
Tharrawaddy ...	84	5	462	28	454	967	6	9
Prome ...	93	13	464	24	443	963	4	12
Total ...	70	11	454	43	476	946	I	I
Irrawaddy—								
Thôngwa ...	45	6	479	40	476	954	3	4
Bassein ...	39	8	376	30	585	962	18	8
Henzada ...	67	4	455	27	478	969	8	11
Thayetmyo ...	74	3	464	19	462	978	4	15
Total ...	53	5	439	30	508	965	II	II
Tenasserim—								
Amherst ...	30	5	261	28	709	967	31	9
Tavoy ...	41	5	329	21	630	974	26	13
Mergui ...	27	3	266	19	707	978	30	15
Toungoo ...	76	10	342	35	582	955	24	6
Shwegyin ...	43	5	348	31	609	964	22	7
Salween ...	4	...	46	5	950	995	36	33
Total ...	40	5	291	28	669	967	VII	III
Northern division—								
Mandalay ...	52	6	430	41	518	453	12	3
Bhamo ...	43	2	167	5	790	993	34	33
Katha ...	44	4	317	14	639	982	27	19
Ruby Mines ...	29	1	223	9	748	990	33	26
Shwebo ...	75	2	422	8	503	990	14	27
Total ...	54	5	383	27	563	968	V	IV

STATEMENT A.—*Comparative table showing the number returned as learning, literate, and illiterate out of every 1,000 persons of each sex in every district and division in Burma*—concluded.

District.	Learning.		Literate.		Illiterate.		Grade of district and division arranged by proportion of male literates.	Grade of district and division arranged by proportion of female literates.
	Male.	Female.	Male.	Female.	Male.	Female.		
Central division—								
Ye-u ...	113	...	455	5	432	995	8	33
Sagaing ...	56	2	408	12	536	986	15	20
Lower Chindwin ...	73	1	371	7	556	992	19	31
Upper Chindwin ...	84	1	541	10	375	989	1	24
Total ...	74	1	419	9	507	990	III	VII
Southern division—								
Myingyan ...	70	1	384	10	546	989	16	24
Pakôkku ...	68	1	371	7	561	992	19	31
Minbu ...	88	2	455	11	457	987	8	21
Magwe ...	93	2	449	11	458	987	11	21
Total ...	78	1	408	10	514	989	IV	VI
Eastern division—								
Kyauksè ...	57	1	254	8	689	991	32	27
Meiktila ...	82	1	377	8	541	991	17	27
Yamèthin ...	74	3	331	8	595	989	25	27
Pyinmana ...	62	3	424	20	514	977	13	14
Total ...	72	2	340	9	588	989	VI	VII
Lower Burma ...	52	7	391	31	557	962	...	...
Upper Burma ...	70	2	392	13	538	985	...	...
Burma ...	59	5	391	24	550	971	...	...
Lower Burma in 1881	108	18	353	18	539	964	...	...

In Statement **A** the districts are graded in the order, firstly, those in which there are proportionately most male, and next those in which there are most female literates. Upper Chindwin holds the first place in the former grade because the non-Burman element in the district was not included in the regular census. Pegu, Thôngwa, Prome, and Thayetmyo rank next; then come Tharrawaddy, Hanthawaddy, Henzada, Minbu, and Ye-u. There are fifteen districts, eight of which are in Upper Burma, which contain more than 400 literates out of every 1,000 males. There are 33 out of the 36 districts of Burma which contain more than 20 per cent.

of literates out of the total male population. The remaining three districts are Bhamo and the Hill Tracts of Northern Arakan and Salween, where the proportion of Buddhists to the total population is very low. It may be said that Buddhism and male education go hand-in-hand, and the number of male literates found in a district depends on the number of Buddhists, as compared with other religions.

In female education we find that Rangoon, which, owing to the number of illiterate Hindu cooly immigrants in it, only ranks twenty-first on the list of male literates, is easily first in the list of female literates. This is due to the following reason:—There are comparatively speaking few women in Rangoon, and a very large proportion of these are Christians, amongst whom female education is more common than in any other religion. Moulmein, which was first in 1881, is no longer ranked as a district, its identity being lost in Amherst. Pegu holds the proud position of being second, alike in the extent of female as of male education. This is due to the efforts of the Missionaries, who have laboured here very successfully. Mandalay ranks next, owing its place no doubt to the large European community. In Thôngwa, Hanthawaddy, Toungoo, Shwegyin, Bassein, and Tharrawaddy the presence of Christian Missions explains the position held by these districts.

The accompanying Statement **B** is a variation of Statement **A**, in that it shows the proportion of literates, learning, and illiterates distributed by 1,000 of the population of each sex, after deducting all children under five years of age, who may be supposed, in Burma at least, to be under the age at which they are sent to school. No such return was prepared in 1881; hence no comparison can be instituted.

STATEMENT B—*Comparative Table showing the number returned as learning, literate, and illiterate out of every 1,000 persons of each sex in every district and division in Burma, deducting those who are under five years.*

District.	Learning.		Literate.		Illiterate.	
	Male.	Female.	Male.	Female.	Male.	Female.
Arakan—						
Akyab	28	2	302	20	670	978
Northern Arakan	..	...	54	1	946	999
Kyaukpyu	44	4	397	17	559	979
Sandoway	41	4	349	13	610	983
Total ...	32	3	323	18	645	979

STATEMENT B.—*Comparative Table showing the number returned as learning, literate, and illiterate out of every 1,000 persons of each sex in every district and division in Burma, deducting those who are under five years*—continued.

District.	Learning.		Literate.		Illiterate.	
	Male.	Female.	Male.	Female.	Male.	Female.
Pegu—						
Rangoon town	51	36	390	171	559	793
Hanthawaddy	59	8	527	43	414	949
Pegu	72	15	563	59	365	926
Tharrawaddy	98	6	545	33	357	961
Prome	108	15	540	28	352	957
Total ...	80	13	518	51	402	936
Irrawaddy—						
Thôngwa	52	8	552	47	396	945
Bassein	46	8	440	36	514	956
Henzada	78	5	534	32	388	963
Thayetmyo	86	4	537	22	377	974
Total ...	62	7	511	36	427	957
Tenasserim—						
Amherst	35	6	304	34	661	960
Tavoy	47	6	385	25	568	969
Mergui	32	4	306	22	662	974
Toungoo	88	11	397	42	515	947
Shwegyin	50	6	407	37	543	957
Salween	5	...	53	5	942	995
Total ...	47	7	339	33	614	960
Northern division—						
Mandalay	58	7	486	64	456	947
Bhamo	48	2	187	6	765	992
Katha	50	4	361	17	589	979
Ruby Mines	31	1	238	10	731	989
Shwebo	86	2	480	9	434	989
Total ...	60	5	432	31	508	964
Central division—						
Ye-u	130	1	523	5	347	994
Sagaing	66	2	475	14	459	984
Lower Chindwin	85	1	433	8	482	991
Upper Chindwin	95	2	612	11	293	987
Total ...	86	2	486	10	428	988

STATEMENT B.—*Comparative Table showing the number returned as learning, literate, and illiterate out of every 1,000 persons of each sex in every district and division in Burma, deducting those who are under five years*—concluded.

District.	Learning.		Literate.		Illiterate.	
	Male.	Female.	Male.	Female.	Male.	Female.
Southern division—						
Myingyan	83	1	452	12	465	987
Pakôkku	80	1	436	9	484	990
Minbu	103	3	531	12	366	985
Magwe	107	3	519	12	374	985
Total ...	91	2	478	11	431	987
Eastern division—						
Kyauksè	63	2	280	8	657	990
Meiktila	96	1	439	9	465	990
Yamèthin	86	3	383	9	531	988
Pyinmana	70	3	478	23	452	974
Total ...	82	2	389	10	529	988
Total, Lower Burma ...	60	8	450	37	490	955
Total, Upper Burma ...	81	3	451	15	468	982
Total, Burma ...	68	6	450	28	482	966

The accompanying Statement is a development of the idea which underlies Statement **B.** As we have already discussed and laid out in detail the extent of education in the various districts of Burma, there is no necessity to go into such local detail in this statement. Accordingly the population is taken by divisions and not by districts.

STATEMENT C.—*Comparative Table showing the number of those returned as learning, literate, and illiterate out of every 1,000 persons of each sex at each age period.*

By divisions.	0—14.						15—24.						25 AND OVER.					
	Learning.		*Literate.*		*Illiterate.*		*Learning.*		*Literate.*		*Illiterate.*		*Learning.*		*Literate.*		*Illiterate.*	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Arakan	64	5	41	5	895	990	24	1	369	22	607	977	2	...	445	22	553	978
Pegu	177	25	81	20	742	955	36	4	626	89	338	907	1	1	668	43	331	956
Irrawaddy... ...	119	12	78	12	803	976	31	3	629	65	340	932	1	...	696	32	303	968
Tenasserim ...	83	11	51	12	866	977	33	3	423	53	544	944	2	...	463	33	535	967
Northern	143	12	61	9	796	979	44	2	475	45	481	953	1	1	551	33	448	966
Central	165	3	59	3	776	994	60	1	564	15	376	984	1	...	672	11	327	989
Southern	155	3	43	4	802	993	79	1	576	20	345	979	2	...	691	11	307	989
Eastern	159	4	37	3	804	993	58	1	474	17	468	982	1	...	550	10	449	990
Total, Lower Burma...	121	15	67	13	812	972	32	3	552	64	416	933	1	...	601	34	398	966
Total, Upper Burma...	156	5	48	5	796	990	63	1	529	24	408	975	2	...	625	16	373	984
Total, Burma ...	134	11	60	10	806	979	43	2	544	49	413	949	1	...	610	26	389	974

Amongst males we find that learners and illiterates, as might be expected, are most numerous in the 1st age period. In the 2nd age period everywhere, except in Arakan and Tenasserim in Lower Burma and the Northern and Eastern divisions of Upper Burma, literates are in the ascendant and learners had already begun to dwindle. In the 3rd age period, while illiterates are nearly as numerous as in the 2nd age period, literates, reinforced by those who were learners in the previous age period, are now still more numerous. The fact that there are still a few learners over 25 years of age is one that will call for explanation. This anomaly was noticed during the abstraction of the figures from the census schedules and the entries were accordingly verified as far as possible. The return of learners over 25 years of age was due to the fact that those entered as such were either grown men or women in mission schools, or *upazins* in monasteries, who, with somewhat unnecessary modesty, had returned themselves as under instruction.

Amongst women the course of education follows the same lines as regards the age periods as that followed by male education. The table is interesting as it shows that, if we deduct the inmates of missions and the probationers in monasteries, education in Burma usually ceases soon after the end of the first age period, 0—14.

"Mr. Copleston, in his report of 1881, closes his chapter on education with the following suggestive remarks :—

"'It is impossible to decide whether the education of the people as a whole is declining or advancing. In some parts of the country the former would appear to be the case. The influence of the *pôngyis* is undoubtedly decaying, and probably with this weakening of their hold on the people will come a falling off in the attendance of the boys at the *kyaung* for instruction. If the Burmese are to continue as well educated as they are at present, the Government schools and lay schools will have to grow in numbers to make up for the loss of monastic teaching.'

* * * * *

"The following comparative statement, which exhibits the number of Buddhists returned as learning, literate, and illiterate out of every 1,000 of each sex of the population in Lower Burma is the best answer to this question :—

	Learning.		Literate.		Illiterate.	
	Male.	Female.	Male.	Female.	Male.	Female.
1881	119	17	382	16	499	967
1891	58	6	429	29	513	965

"If we make allowance for the mistake in the return of those under instruction in 1881, or, better still, confine our attention to the return of literates, it will be seen that education is not retrogading amongst the Buddhists of Burma. It is clear that, even if the *pôngyis* are losing their influence, their place is being taken by lay schools. We may then rest

assured that, when the returns of the census of 1901 are compiled, we shall find that Burma, instead of having lost ground, will have advanced still further, and that a still larger proportion, both of males and females, will be found amongst the returns of the literate."

It was not until 1890 that the Education Department took action in Upper Burma. In the previous year the Director of Public Instruction had made a tour through Upper Burma, and an Inspector of Schools had registered and examined such schools as were suitable for aid under the Grant-in-aid Rules. In this way it was ascertained that there were in 1890 in Upper Burma 684 public schools with 14,133 pupils and 1,664 private schools with 8,685 pupils. It is worthy of remark that of these schools 29 were Mahomedan, and that there were 176 schools for girls, in which upwards of 2,000 pupils were taught. The first Inspector in Upper Burma had charge of all the seventeen districts. In 1893 there was a re-arrangement: Pyinmana and Yamèthin were assigned to the Eastern Education circle; Magwe and Minbu to the Central circle; and the Upper Burma circle included the Mandalay and Sagaing divisions with Myingyan, Pakôkku, Kyauksè, and Meiktila districts.

For the special supervision and encouragement of indigenous primary education in monastic and in lay schools, each circle of inspection is divided into sub-circles corresponding with one or more of the civil districts and each sub-circle is placed under a Deputy Inspector or a Sub-Inspector of Schools. Every school is classed as "public" (1) in which the course of study conforms to the standards prescribed by the Local Government or the University of Calcutta, (2) which either is inspected by the Education Department, or presents pupils at the public examinations held by the department, by the Calcutta University, or by the Education Syndicate of Lower Burma. An indigenous school is a school established and managed by natives of Burma or India and conducted on native methods. It may be a monastic or a lay school. The monastic schools conducted in monasteries by Buddhist monks are a special feature of Burma; they are attended by boys only. The lay schools are frequently open to both boys and girls, and there are also schools for girls only. There are nine standards of instruction and the classes in schools correspond with these standards. The first two are lower primary; the next two upper primary; the fifth, sixth, and seventh are lower *secondary* or middle, and the last two are upper secondary or *high*. The classification of schools into *high*, *middle*, *upper primary*, and lower primary depends upon the highest class which the school contains. The ninth standard is the Entrance Examination of the Calcutta University.

PLATE XXXVII.



Photo-Block.

Survey of India Offices, Calcutta, 1899.

SHAN SAWBWA IN OPEN DURBAR.

The Vernacular schools are those in which English is not regularly taught. They are almost all indigenous schools and they do not teach beyond the seventh standard.

An institution is considered to be under public management when it is under the direct management of Government, or of officers or committees acting on behalf of Government, or of local committees constituted by law. Schools under public management receive no grants-in-aid ; schools under private management may be aided or not ; if they are "public schools," they are generally aided, but in any given year they may fail to earn grants. In Upper Burma all educational grants are paid from Imperial funds ; there is no cess as in Lower Burma, and, with the exception of Sagaing and Mandalay, Municipal Committees pay nothing to schools.

There are two systems of aid, one for indigenous and one for non-indigenous schools. The non-indigenous are for the most part established by Missionary societies.

The Grant-in-aid Rules which apply to non-indigenous schools were last revised in 1890. The manager of a school who applies for aid under these rules has first to show that he complies or will comply with certain rules about the qualifications of teachers, the rates of fees, the admission of pupils, accommodation, and discipline. The school is then put on the register and is eligible for grants of five kinds, namely—

(i) results grants for each pupil who passes an examination ;
(ii) boarding grants for each pupil supplied with board and lodging on the school premises ;
(iii) special grants to supplement private expenditure on building and furniture ;
(iv) supplementary grants bearing some proportion to the total expenditure on the school ;
(v) fixed grants.

The first three classes of grants need no explanation. The fourth class is given to newly established schools, in backward districts, or schools attended by uncivilized tribes. Fixed grants were introduced in 1890. They are given only to schools whose permanent character has been established, are tenable for two years at a time, and are calculated on the average earning by results for three years. All grants are subject to the condition that the total given to one school must not exceed the amount contributed during the previous year from private sources. Attendance grants and grants for partial passes are no longer given.

There is a special set of standards for indigenous schools, similar to those for Anglo-Vernacular schools, but not going above the

Seventh Standard. Indigenous schools are maintained by Burmans, Karens, Mahomedans (Bengalis, Hindustanis, and Madrassis), and Tamil Hindus. In order that an indigenous school may be inspected and may earn grants it must have,—

(i) a working session of at least four months;
(ii) an average attendance of twelve pupils;
(iii) at least four pupils who are able to read and write their vernacular as judged by Standard II.

Aid is given in the form of—

(i) results-grants;
(ii) salary-grants for certificated assistant teachers;
(iii) special grants to certificated managers who may establish independent schools, towards the initial cost of equipment;
(v) salary-grants for certificated teaching managers;
(vi) special salary-grants for Karens;
(vii) special results-grants for girls.

Salary-grants are given to enable indigenous schools to secure qualified teachers. They are not intended to be permanent, but are given to start the schools. Ordinarily they last for three years, are then reduced by half, last for two years more, and are then withdrawn. The certificated teacher is sometimes paid by the Municipal Committee or District Cess Fund (in Upper Burma by the Department), and sometimes he is paid half by the manager. Certificated teachers who establish schools and produce assurances of local support may be paid under clause (v) a salary of Rs. 30 the first year, Rs. 20 the second year, and Rs. 10 the third year, besides getting grants in other forms. After the third, or in exceptional cases the fifth year, this form of aid ceases. The Karen teachers' salary-grant rules have recently been revised. They now provide for two grades of teachers, who have respectively to pass the Primary and Secondary Vernacular Teachers' tests; an average attendance of only fifteen pupils is required. The results-grants for girls are 50 *per cent.* higher than for boys.

There are two Normal Schools, one at Akyab and one at Moulmein, both managed and maintained by Government. The Moulmein School has both Vernacular and Anglo-Vernacular departments. The Akyab school has a Vernacular department only. Normal schools are maintained in two aided girls' schools for training school-mistresses. From the 1st January 1893 the possession of a teacher's test certificate has become indispensable for an appointment as a teacher in a Government or Municipal School, and from the 1st January 1896 aided schools were required

to employ certificated teachers. The course for the teacher's test extends over three years, and a period of practical teaching is exacted before the final certificate is given.

The education of special classes.

Reference has already been made to the existence of special rules for the education of Karens. Till 1890 grants to Karen schools were payable at 50 *per cent.* above the ordinary rate. Karens, however, have so rapidly come to the front in education, that in three districts only, namely, Tavoy, Mergui, and Toungoo, are they any longer considered backward and needing extra payment. Chin and Kachin schools are paid at the higher rate. Owing to the heavier cost of keeping up schools for Europeans, grants are paid at double the ordinary rates. In addition to this the Government provides the following forms of aid :—

(1) A fixed number of monthly stipends tenable for three years, awarded annually in each division of Lower Burma for the maintenance and education of orphans at approved institutions.
(2) A fixed number of boarder stipends tenable for three years, to enable poor parents to send their children to boarding schools.
(3) A fixed number of apprentice stipends tenable by apprentices at approved workshops.

The above stipends are awarded by the Boards at Rangoon, Moulmein, and Akyab, respectively, under fixed rules. No stipends are paid except on account of children who are actually under instruction. The stipends are tenable subject to good behaviour and progress.

The examinations held in the provinces are of two kinds—

(1) University. | (2) Provincial.

The University examinations consist of the Entrance, F. A., and B. A., and are conducted by the Calcutta University.

The Provincial examinations are conducted by the Education Department and by the Educational Syndicate of Lower Burma respectively. The former conducts the examinations of Standards I—VI and Standard VIII in Lower Burma and all the Standards from I to VIII in Upper Burma.

The Educational Syndicate conducts the following examinations :—

(1) Myoôkships in Upper and Lower Burma.
(2) Of Advocates in Upper and Lower Burma.
(3) Thugyiships in Upper and Lower Burma.

(4) Seventh Standard in Lower Burma.
(5) Teacher's Test in Upper and Lower Burma.
(6) Clerkship Test in Upper and Lower Burma.
(7) Entrance Test for clerkships in Upper and Lower Burma.
(8) Burmese by elementary, lower, and higher standards for non-Government servants in Upper and Lower Burma.

Under recent orders the examinations in all subjects but English in Standards I—VII inclusive are to be conducted in a recognized vernacular, the questions being set and answered in that vernacular.

Government scholarships.

The scholarships now consist of—

(i) Higher University
(ii) Middle University
(iii) Lower University
(iv) Middle English
} for Upper and Lower Burma.
(v) Upper Primary scholarships for Upper Burma only.

The following table gives the details:—

Designation.	Number of scholarships available.	Monthly value.	Period of tenure years.	Place of tenure.	To whom open.
		Rs.			
Higher University.	4	16	2	Any College in the Province affiliated to the Calcutta University to the B. A. Standard.	Students educated in Burma who have passed the F.A. examination and who are under 22 years of age.
Middle University.	1	14	2	Any College in the Province affiliated to the Calcutta University to the B. A. Standard or F. A. Standard.	Students educated in Burma, who have passed the F.A. examination and who do not hold University scholarships, and that student educated in Burma who has passed the Entrance Examination first in order of merit of the students presented from the Province and who is under 20 years of age.

Designation.	Number of scholarships available.	Monthly value.	Period of tenure years.	Place of tenure.	To whom open.
		Rs.			
Lower University.	11	12	2	Any College in Burma affiliated to the Calcutta University to the F. A. Standard.	Students educated in Burma who have passed the Calcutta Entrance Examination and are under 20 years of age.
Middle English.	28	8	2	Any High School in the district or division, to which the scholarship is allotted.	Students who have passed the Seventh Standard (English) Examination, gaining scholarship marks, and are under 14 and 16 years of age respectively.
Upper Primary (Upper Burma only).	40 Anglo-Vernacular and 40 Vernacular.	3 3	3 5	In any Anglo-Vernacular Seventh Standard School.	Students who have passed the Fourth Standard Examination, obtaining scholarship marks, and are under 14 and 16 years of age respectively.

In addition to the above, a limited number of special scholarships are annually awarded to students of medicine. Those for engineering have been discontinued. The medical scholarships are awarded to men and women, and are tenable in the Calcutta Medical College. Those for men are open to candidates of Burmese and Indo-Burmese origin only, who have passed the F.A. Examination and are not over 22 years of age. The value of each scholarship is Rs. 60 a month. Selected candidates have to sign a bond that they will duly attend and complete the full course, and, if required, enter Government service as an Assistant Surgeon after passing the examination for the L.M.S. degree. Those for women are open to female candidates of any nationality domiciled in Burma, who have passed the Entrance examination, possess a knowledge of Burmese equivalent to the Seventh Standard, and are under 21 years of age. One scholarship a year is awarded, and is tenable for three years in the Calcutta Medical College. The scholarship is of the value of Rs. 40 a month, with a free passage between Rangoon and Calcutta once a year during the vacation. A lower grade of Medical scholarships is tenable at the Madras Medical College for Hospital Assistants. Candidates must not be below 15 or above

19 years of age, and must have passed the Seventh Standard Anglo-Vernacular examination. The scholarships are tenable for four years. The first year, during which the precollegiate course is taken, is spent in the province, and a scholarship of Rs. 20 is paid. The three subsequent years are spent in Madras, and a scholarship of Rs. 40 is paid. Each scholar has his passage to and from Madras paid once a year during the vacation.

St. Barbe, Bigandet, and Gilbert scholarships.

The Educational Syndicate awards from funds in its keeping three scholarships a year of Rs. 10 each to women, tenable for one year at the Dufferin Hospital, Rangoon. These are known as St. Barbe scholarships. They also award two scholarships of the value of Rs. 300 a year, tenable for five years, in the Calcutta Medical College, to candidates, male or female, who are domiciled in Burma, have a fluent colloquial knowledge of Burmese, and have passed the First Arts Examination if male, and the Entrance Examination if female, candidates. These are known as the Bigandet scholarships. The Gilbert scholarship is tenable on the technical side of the Rangoon College by a selected student who has passed the Seventh Standard Anglo-Vernacular Examination. Till the technical side is opened it is tenable in any approved workshop.

Survey schools.

The survey schools of Upper and Lower Burma are now under the control of the Director of Land Records and Agriculture, and are worked under the Upper and Lower Burma survey school schemes, which provide a certain number of scholarships tenable in the survey schools of the province.

Burma State Railway Workshop apprentices.

Forty apprentices' stipends are tenable at the Insein Railway Workshops, 20 for Europeans and Eurasians, and 20 for Karens and Burmese. These apprenticeships are tenable for five years and are worth monthly—

	Rs.
First year	12
Second year	15
Third year	20
Fourth year	28
Fifth year	40

New pupils are on probation for six months, during which Karen and Burmese students are paid Rs. 12 a month by the Education Department.

The Text-book Committee, under the presidency of the Director of Public Instruction, chooses and prepares text-books, English and Vernacular, for the use of schools in the province. The Committee consists of the Commissioner of the Pegu Division, an Inspector of

Schools, and the Principal of the Rangoon College, as *ex-officio* members. The other members are appointed by the Chief Commissioner. The Committee is assisted by an Editor of Vernacular Text-books and by a certain number of translators.

There was some opposition at first on the part of some leading Buddhist ecclesiastics in Mandalay to secular education, which caused for a time a decrease in the number of Primary Schools classed as public institutions. In 1892 there was a large decrease in the number of pupils in Mandalay, Shwebo, Sagaing, Lower Chindwin, Myingyan, Kyauksè, and Magwe districts; in Katha, Bhamo, Ruby Mines, and Upper Chindwin the decrease was very small. In the remaining districts there was an increase. Gradually, however, the prejudice and hostility died out, and the younger *pôngyis* are now ready enough to co-operate with the officers of the Education department and to order the studies in their monastic schools according to the Government Code. In 1895-96 the number of indigenous schools in Upper Burma rose from 2,123 to 2,394, and the number that received aid from Government rose from 533 to 892, and it was noted that the advance was most conspicuous in Mandalay and Sagaing districts.

In the Administration Report for 1896-97 it is noted that "the feature of the five years' progress has been the development "of Middle Vernacular education, and the Lieutenant-Governor is "neither surprised nor disappointed at the small improvement in "the number of high schools. There were twelve of these institu-"tions in 1892-93 with 3,894 pupils. The fact that in five years "only one school and 218 pupils have been added renders it easy "to understand the difficulty of obtaining a supply of students for "university examinations * * * The tendency of pupils and "parents to look upon Standard VII as their final goal will be "partially combated by the requirement of higher standards for the "higher grades of Government employment, but imperfectly edu-"cated men can still earn fairly high salaries as clerks and the im-"provement will be slow. * * * It is not to be expected that "the lay village school-master's method of teaching should ordi-"narily be in conformity with the departmental standard, and very "few of the managers of indigenous schools are certified. Pro-"gress in this direction has been, and probably will for some time "continue to be, slow. The want of reliable text-books in Burmese "has been severely felt, but is being supplied."

In Primary education, in spite of a falling off in the number of schools and pupils, the number of passes by the primary standards has increased in every district in Upper Burma, except Bhamo, Myitkyina, and Shwebo.

The first *Patamabyan* Examination in Pali was held in June 1896.

The scheme at the start met with some opposition on the part of the leading monks in Mandalay, but the results have been very encouraging.

Education amongst the Chins in 1897 was confined to two schools of the American Baptist Mission, one of which was established in that year. Education amongst the Kachins made little headway. They object to coming down to the plains, and there are no qualified teachers to visit their villages except the American Baptist Missionaries, who have also established schools for Shans in Rangoon, Hsi Paw, and Möng Nai.

G. B. C. P. O.—No. 3895, B. S., 4-10-99—1,006.

GLOSSARY.

[S=Shan. C=Chin. Ch=Chinese. K=Kachin.]

Abidan, *Abhidan*, dictionary.

Acheik, florid design; used of a waistcloth or *paso*.

Ahmaya, a delegate or envoy sent on a special mission; like the Chinese *wei-yüan*.

Ahma-ye, writer of royal decrees.

A-hmudan, soldier, soldiery.

A-hmu-yè, military officer.

A-hwun, official.

Akyauk, for *akauk*, commission.

Akun-daw-ye Htana, Revenue Department.

Akun-daw, revenue.

Akyat, section-commander, non-commissioned officer.

Akyi, chief man.

Akyi-daw, Steward of the Household.

Akyi-sa-ye, clerk to the Steward of the Household.

Alè-nandaw, Central Palace.

Amat, Minister.

Amat-chôk, Chief Minister.

Amein-daw, Royal order.

Amein-daw-hkan, receiver of a Royal Patent.

Amein-dawya, official appointed by letters patent; advocate.

Ameindaw-ye, clerk of the king.

Amwe-pyet, failure of inheritance.

Amyauk wun, Director of Ordnance.

Anauk-taga-hmu, turnkey of the Women's Gate.

Anauk wun, Warder of the West Gate of the Palace. Frequently a mere title, the holder of which rendered other service.

Anauk-wun sa-ye, clerk to the Governor of the Western Gate.

Anauk-yôn sa-ye, clerk of the Western or Women's Court.

Anaung sa-ye, a clerk of the Revenue Court in Mandalay.

Anu-nyata hkôn, *lit.*, a permitted arbitrator, an arbitrator appointed by mutual consent.

Apyodaw, Maids-of-Honour.

Asu, *lit.*, share.

Asu-cha, share.

Asu-pônthè, *lit.*, share-fixed.

Asut, local cesses, or taxes.

Athi, Government servant of the Reserve.

Athi, village common lands.

Athi sa-ye-gyi, clerk to the Minister of Supply.

Athôn-sa-ye, Clerk of Supply: Superintendent of Works.

Athôn-wun, Director of Public Works.

Atwin-sa-ye, clerk to a Minister.

Atwinwun, Secretary or Privy Councillor.

Aung-lauk, a species of bean, poisonous unless soaked in water before cooking.

A-we-wun, Provincial Governor.

A-we-yauk, Marshals of the Court, Royal messenger.

Ayadaw, royal land.

Ayat-gaung, chief man of a quarter.

Baho-si, The Great Drum of the Palace

Bahosin, the campanile on which the great drum was mounted.

Bahoyin, v. *Bahosin*.

Bala, check design in silk weaving.

Ban, flat shallow basket.

Baw-di, a species of banyan (*ficus religiosa*).

Bayingan, Viceroy: the Regent in Burmese times.

Bedin, the Vedas, the sacred books; the pronouncements of the Vedas: religious superstition.

Betthet, *beik-theik*, a blessing with consecrated water; the "anointing" ceremony of the coronation.

Bilu, ogre.

Bizana, an astrological division of time.
Bo, military, an officer; the leader of a band, separate, or with others.
Bobabaing, ancestral or private land.
Bo-gyi, bo-győk, Commandant.
Bo-hmu Min, a military title, General Officer, usually applied to the Chief Officer in the Shan States.
Bo-shu-hkan, the afternoon leveè when military officers were received, *lit.* "to suffer the gaze of Military Officers."
Bwè sadan. the Roll of Titles.
Bwet, glaze.
Byanma Min, the King of Burma.
Byè-taik, the Privy Council: it administered especially the finances of the country and controlled the army.
Byőn, ruby-earth.
Changtung (K.), intermediary.
Chattah (*htı*), umbrella.
Chauk-myo wun, Governor of the Six Districts.
Chaung, stream.
Chaw, glaze.
Dagaba, a pagoda.
Daing, an area under one jurisdiction; the banker of a gambling table.
Daing, a measure of length, from two to three miles.
Daing, official.
Daing-baw, v. *sub Daingpaw*.
Daingpaw, lands abandoned through flood.
Daing-thugyi, headman of a jurisdiction.
Daing-wun, Commander of the *daing* regiment.
Dani (*tin-lè*), cane-sugar.
Dat, relics of the Buddha: the elements.
Dattaw, the Sacred Relics of Buddha.
Dayaka, almsgiver.
Deittőn, the Book of Omens.
Dewa, Spirits of a higher order.
Dha, sword.
Dhakauk, hoe.
Dhama-u-gya, land acquired by right of first clearing.
Dhammathat, legal maxims; Institutes. The body of Buddhist law.
Dhoti, the Indian loin-cloth.
Dőkkhita, pauper; person exempted from taxes for various reasons, chiefly infirmity.
Dugők, the outer garment of a monk, worn over the shoulder.
Dutiya, second.
Duwa, a Kachin chief.
Ein(g)-saung-nat, Spirit-guardian of the house: *Lar*.
Ein-she-min, Heir-Apparent.
Ekathi, a Buddhist monk's outer robe—larger than the *thin-gan*.
Ērawng Mőt K'rak (Wa), forked sticks, showing buffaloes' sacrificed.
Gaing-dauk, abbot, in charge of several monasteries.
Gaing-győk, the senior abbot of the neighbourhood.
Gaing-ők, abbot.
Galőn, a griffin.
Garuda (Pali), a *galőn* (*q. v.*)
Gâtha, incantation.
Gaung, headman.
Gaungbaung, the Burmese man's head-dress.
Gyat, a round flat piece of wood used in weaving.
Gyat-thwa, a weaver's shuttle.
Gyi, large.
Hai (S.), upland or dry cultivation.
Haw (S.), palace of a *Sawbwa*.
Haw (Zayein Karen), hostel.
Hēng, (Shan), headman.
Hentha, the ruddy sheldrake, the national bird of Pegu.
Hkam, (S.), *lit.* gold; commonly used as a name.
Hkamauk, bamboo spathe sun-hat.
Hkőn, Arbitrator.
Hkunbo-tein(g), Bailiff of the Civil Court; *hkunbo* dues he collected.
Hle, boat.
Hlethin Atwinwun, Minister of the Navy.
Hlethin Bo, Commodore of the Fleet.
Hlut, Great Council of State.
Hlutdaw, v. *Hlut*.
Hmannan-daw, Crystal Palace.

Hmaw-saya, magician.
Hmyaung-gaung, *Hmyaung-gyi*, inspector of irrigation channels.
Hmyawdwin, open cuttings, in ruby-mining.
Hnitmyo-wun, Governor of the Two Districts.
Hnyi-hkôn, *lit.* accompanying arbitrator, *amicus* curiæ.
Hpaung-(daw), (Royal) barge.
Hpaung-wun, Admiral of the Fleet.
Hpet-htôn hman-taung, divination by leaf.
Hpè-wan, the Shan cycle.
Hpyin, cotton cloth.
Hsũng, a Shan district official, often called a *Sein*.
Htamõng, a Shan official, controlling a *mõng*, or district smaller than a *Hẽng's*.
Htao-mõng, (S.), elder, the earliest form of *Htamõng*.
Htauk-taga, drop-windows, kept up by a prop.
Htaungwun A-she-pyin: *Taung-pyin*: *Myauk-pyin*. *Anaukpyin*: Assistant Magistrates of the east, south, north, west exterior.
Htaung-hmu, *Htaungsachi*, gaoler.
Hti, umbrella, *esp.* the umbrella that crowns a pagoda.
Inba-se, the madder plant.
Indaing, tract of *in* jungle.
Indôn, a wooden vessel in which areca nuts are trodden to give them a good colour.
Jâtakás, Episodes in the life of the Buddha.
Jhum, the Indian word for the hill or dry cultivation called *taungya* by the Burmese and *hai* by the Shans.
Kadaw, homage, to do homage.
Kadaw-pwè, levée.
Kadaw-sa-ye, clerk of the Warrant of Precedence.
Kado-hka, ferry-due.
Kaung, a tract of country divided into *si*, from which the Burmese cavalry regiments were recruited.
Kaing, elephant grass.
Kaing, garden lands.
Kaing-twet, perquisite, *lit.*, holding.
Kalā, foreigner.
Kalaga, curtain.
Kalawun, Agent for foreign residents; consul.
Kaleik, the white seed of a shrub, used by the hill tribes for embroidering bags, waist belts and bodices.
Kaleit v. *Kaleik*.
Kalôn v. *Galôn*.
Kalpa, the present World-Cycle of Buddhism.
Kan-daing, controller of the reservoirs.
Kãng (S.), village headman.
Kan-ôks, controller of the irrigation tanks.
Karawaik, the carrying bird of Vishnu: the *Garuda*.
Kathôn-myaung taikso, officer in charge of the *Hlutdaw* expense chest.
Kattu, junk.
Kauk-chet-kyi, a fee levied in civil suits.
Kauk-gyi, late-rain paddy.
Kauklat, mid-season paddy.
Kaukti, hot-weather paddy.
Kaukyin, early-rain paddy.
Kaung, rice-liquor.
Kaung, the lump of metal obtained by smelting iron ore in Pang Lōng.
Kaung-ye, rice-spirit.
Kava, an astrological division of time.
Kayaing, Division.
Kayaing-wun, District Governor.
Kemmõng (S.), Heir-Apparent.
Ken, the reed-organ of the La'hu.
Kinwun Mingyi, Lord Commissioner and Castellan of the Guard-stations.
Kè (S.), village headman.
Keun-daw-mye, a term applied by Dr. Richardson to Burmese loafers in the Shan States.
Kha (K.), river.
Kiang (Ch.), river.
Kinmõng (S.), village headman: a literal translation of the Burmese *Myoza*, 'town-eater.'
Ko, nine.

Kôn-hpet, lit., trade-partner.
Koyin, novitiant in a monastery.
Kozin (C.), the Supreme Being.
Kumlao (K.), democratic.
Kumsa (K.), villages with hereditary chiefs.
Kunbo, fee; quittance.
Kunya-gaung, Page of the Royal Betel.
Kusumba, an opium emulsion drunk by the Rajputs.
Kwetchè, excluded, applied to *dhama-u-gya* lands.
Kwin, block of cultivation.
Kyamaing, Heir Apparent.
Kyāng-jōng, (Kachin), butcher.
Kyan, religious treatise.
Kyaung, a monastery.
Kyaung-miku, an unidentified tree.
Kyaung-taga, builder of a monastery.
Kyedauk, a bamboo stoup.
Kyem-möng, the Shan *Kem-möng* or Heir Apparent, written as pronounced.
Kyiwun, Ovèrseer of the Granaries.
Kyolan, a patent issued to soldiery.
Kyoma-gyi, Gentlemen-At-Arms.
Kyun, island.
La-byi-gyaw, the waning of the month.
Lamaing, Crown predial slaves, land worked by Crown slaves.
Lamaing-sa-ye, Registrar of the Royal Slaves.
Langoti, (Hind.), loin cloth.
Lapetye-saing, Tea Chamber.
La-san, the waxing of the month.
La-sôk, the waning of the month.
Lèdaw, royal land (irrigated).
Leipbya, butterfly.
Le-myo Wun, Governor of the Four Districts.
Lè-sa-ye, irrigation-clerk.
Lesè-ngasè, The Forty, Fifty.
Letpet (*lapet*), pickled tea.
Letsaung-yôn, the Gift Chamber.
Letsaungyu-taikso, Controller of the Gift Chamber.
Letswè, Gentleman-At-Arms.
Letthama, carpenter.
Let-thôndaw, Page-in-Waiting.
Lettin, lit., placed in the hand; a fee levied in civil suits.
Le-yôn, irrigation office.
Linkin dha, the long Kachin sword.
Lōng (S.), great.
Lu-dwin, caves in ruby-bearing limestone.
Lungyi, the men's waistcloth.
Lupyandaw, a re-entrant into secular life.
Lutwet, a deserter from the Sacred Order.
Maha, great.
Mahādan Wun, Buddhist Ecclesiastical Censor.
Maha-yazawin, the Great Chronicle, Burmese Royal Annals.
Ma-lwè (*lit.*, not easy), a wicket-gate or postern.
Maung kyaw, to flog with beat of gong.
Mayin, dry-weather paddy.
Mè-ga-le, a plant from which a blue dye is obtained.
Mè-gyi, the *Ruellia-indigofera* or indigo plant.
Methila, a female mendicant.
Mibaya, Queen.
Min, King.
Mingala, propitious.
Mingala Linga, the Ode of Happiness.
Min-gyi, Commissioner.
Min-mye, Royal land.
Mintaya-gyi, a Royal title, especially applied to King Mindôn.
Mintha, Prince.
Min-thami, Princess.
Mi-twe (K.), medium.
Mo-gyo, an alloy of gold and brass.
Möng (S.), a town or circle of villages.
Myamma, Burmese.
Myauk, north.
Myaung, trench.
Myedaing Wundauk, Assistant Surveyors.
Myedaing, Survey Officer.
Mwe-daw, the Sacred Hair of Buddha.
Mye-hkun, land-receipts.
Mye-nan, lit. the Earth Palace, the central Palace of the Kings of Burma.

Myin-gaung, Captain of Horse.
Myin-sa-ye, Adjutant of Horse.
Myin-sa-ye-gyi, Clerk to the Master of the Horse.
Myin-si, a cavalry officer.
Myinsu-gyi Wun, Commandant of the Cavalry Brigade.
Myintat-bo, Captain of Cavalry.
Myin Wun, v. *Myinzu-gyi Wun*.
Myosa, v. *myoza*.
Myosa-ye, town clerk, bailiff.
Myotaga-bo, Captain of the City Gate.
Myo-taga-hmu, turnkey of the City Gate.
Myothugyi, headman of a town or circle of villages.
Myowun, Governor of a City or District.
Myoza, ruler of a sub-State or one of the Smaller states; also generally, applied to all officials who drew their salary from the revenues of a town or district.
Mythun, a hybrid between the buffalo and the cow.
Na (S.), lowland.
Nadaw, bell.
Nagā, a dragon; as adj. Faery.
Nagata, gold-inwrought; cloth.
Na-hkan, *lit.*, receiver of the Royal Commands; a subordinate Burmese official in the Shan States.
Na-hkandaw, King's Messengers, Pursuivants.
Nakat, constellation.
Nak-nkat, v. *Nakat*.
Nam (S.), river.
Namè, name.
Nan, the totem-sign of the day of the week on which one is born.
Nat, *Nat-dewa*, a Spirit.
Natgyi, chief Spirit.
Nat-kadaw, Spirit-medium.
Natkun, Spirit-shrine.
Nat-min, chief Spirit.
Nat-ók, ruler of the Spirits, a medium.
Nat-saw, a Spirit-medium.
Natsaya, Spirit adept.
Nat-shin Yan-naing, *lit.*, Lord of Spirits; victorious.
Natsein, green-faced Spirits of the Air; malevolent.
Natsin, Spirit-shrine.
Natsingôn, Spirit-shrine.
Nat-tha, Spirit.
Nat-thami, Spirit Princess.
Nat-than, ode to the Spirit.
Nat thitbin, Spirit tree.
Natwun, Lord of Spirits.
Nauk-lwe, a basket carried at the back of the neck.
Nayi, a division of time: one-sixtieth of a natural day.
Neikban, Nirvāna.
Nè-ók, township officer.
Neyachathwe-thaukgyi, Usher of the Court; Apparitor.
Nga-bôn-taik, Gentleman-At-Arms.
Nga-myo Wun, Governor of the Five Districts.
Nga-pein, a kind of fish, usually called a sardine.
Nga-pi, salted and pressed fish; fish-paste.
Ngayat, *lit.*, the Five Places.
Ngayet, v. *Ngayat*.
Ngè, small.
Ngwe-kun-hmu, a Shan official; the administrator of one of the small States in the Myelat.
Niba, madder.
Noi (S.), little.
Nyaw, the *Morinda exserta*.
Nyaung-bin, banyan.
Nyi-la-hkan, to give audience.
Ŏk, Controller.
Pad, a division of time.
Pakôndan, a pedlar; *lit.*, one who carries on the shoulder.
Paleiksa, the "eater" of Paleik village
Palin, throne.
Pa-ók-chók, Governor.
Parabaik, note-book.
Paso, the Burmese man's waistcloth.
Patama, first.
Patama-byan, *lit.*, to rehearse at the *Patama* Examination in the Buddhist scriptures; one who has passed this examination.
Pauk, entrance.
Paung-(daw), (Royal) barge.

Pawa, the Burmese woman's silk kerchief.
Powa, v. *Pawa*.
Pawmaing (Burmese form of Shan *pawmöng*), headman.
Pawmöng (S.), elder; village headman.
Paya, pagoda, Buddha.
Paya-kyun, pagoda-slave.
Paya-taga, builder of a pagoda.
Payeik, prayer.
Payit-pôn, heaps of manure spread on the hill fields.
Pè, a superficial measure, 1·77 18acres.
Pènin, steersman.
Pènin thugyi, coxswain, v. *pènin*.
Pè-gyi, a species of bean.
Pèyin, early peas.
Pitaka (*Bitaghat*), the Canonical writings.
Pitaka-taik, Monastery library.
Po, insect.
Pôngyi, a Buddhist monk.
Pônna, a Brahmin.
Pônzo, old clearings overgrown with jungle.
Pran, an astrological division of time.
Pwè, a festival, a dramatic performance.
Pyathat, the spire of a Burmese sacred building.
Pyaw-tha turintha, door-keeper.
Pyeitta, gnome.
Pyi, measure.
Pyi, country.
Pyinsama, fifth.
Pyi-so, Governor.
Rahan, monk.
Rahanda, an *ariya*, an ascetic who has attained the fourth of the paths that lead to Nirvāna.
Rathi, a holy man, a hermit.
Rishi, v. *Rathi*.
Sa, *lit.*, to eat.
Saba-gyi, paddy-bin.
Saba leikpya, *lit.*, paddy butterfly, the Spirit of the Rice-fields.
Sadaw, Member of the Great Council of the Buddhist Order.
Sadôtta, fourth.
Saga-bin, the *champak*.
Saing-gyôk-kyi, a fee levied in civil suits.
Saingya-hkan, a village headman appointed in the absence of one of the hereditary family.
Salang (K.), headman.
Salwè, baldric, the Burmese equivalent for the Brahmanic cord.
Samghas, communities.
Samshu, rice spirit.
Sanad, patent.
Sangkyan (S.), the New Year.
Sanwin, turmeric.
Sao maha (S.), *lit.*, Great Ruler.
Saung, building.
Savai, goblet.
Sawbwa, the Ruler of a Shan State.
Sawn (K.), spirit.
Saya, teacher.
Sayadaw, a Buddhist elder.
Sa-ye, clerk.
Sa-ye-dawgaung, head clerk.
Sa-ye-dawgyi, Clerk of the Council; Assistant Secretary.
Sa-ye-gyi, Chief clerk.
Sè-ein-gaung, ten-house headman.
Se-gyi, controllor of the weirs.
Sèik, a quarter *pe*.
Sekku, paper.
Sekkusa, a writing.
Sakya v. *Setkya*, a celestial weapon.
Sèlè, *lit.* weir-paddy.
Setkya, magic.
Shikho, to make obeisance.
Shins, probationers of the Buddhist Order.
Shin-pyu, to admit a novice into the monastery.
Shwe, gold.
Shwed(h)a-bo, Colonel of an Infantry Regiment.
Shwe-hmu, headman; the special term was applied in gold-producing tracts.
Shwe-pyi-so, *lit.*, "Officer of the Golden Country;" Alderman of the city.
Shwe-pyi-zo, v. *Shwepyi-so*.
Shwe-taik, treasury.
Shwe-taik Mingyi, Master of the Mint
Shwetaik sayin, *lit.*, Treasury roll.
Si, a riding.

Si-gyi, drum.
Sikkè, a provincial official.
Sikra, spire.
Simi-dôn hmu, lamp-lighters.
Sin-hna-maung, a plant, not identified.
Sin-hpyu, white elephant.
Sin-athôn-wun, Officer in charge of the Royal Elephants.
Si-sa, lands held by troopers on a service tenure.
Si-sa-ye, Adjutant of a Cavalry Regiment.
Sittan, Official List.
Swe-daw, Sacred Tooth of Buddha.
Ta, a measure of length, equivalent to 1,000 cubits.
Tabindaing, *lit.*, unmarried; *esp.* the unmarried daughter of the Kings of Burma.
Taga-det, *lit.*, the entrance; a fee levied in civil suits.
Taga-ni, the Red Gate; the gate opposite the palace spire.
Tagôndaing, the long pole with streamers set up in Buddhist monastery precincts.
Tai, (S.) Shan.
Taik, a group of monasteries.
Taikthugyi, circle headman.
Taing, a measure of length v. *daing*.
Tan, toddy-palm.
Tarama-hkan, v. *Tayama-hkan*.
Tasaung, v. *tazaung*.
Tatbo-hmu, v. *Tat-hmu*.
Tat-hmu, captain.
Tatmyo, fortified town.
Tat-thuyè, regiment.
Taung, hill.
Taunghmu, v. *Htaung-hmu*.
Taungsa, a Karen official, a *Myoza* (*q. v.*)
Taungsa-chi v. *Htaungsa-chi*.
Taungwin-hmu, Warden of the south wall (*v. Win-hmu*).
Taungzingôn-mye, see Vol. II, p. 444.
Taw, jungle.
Taw-gè, forester.
Taw-ôk, Forest Ranger.
Tayama-hkan, Puisne Judge.
Taya-sa-ye, Clerk of the Civil Court.
Taya-thugyi, Civil Judge; Chief Justice.
Tayôk(B.), Chinese.
Tazaung, a seven-tiered pavilion.
Tazaung pyathat, a shrine; also a kind of plant.
Tazè, disembodied spirits.
Tazè, a field on the margin of a river.
Thabye, the *Eugenia* tree.
Thagya, a superior order of Spirits inhabiting the second of the Lower Celestial Worlds.
Tha-le-san, specially prepared rice.
Thamadi, assessor.
Thami-ka-nya, virgin.
Thamada-min, President.
Thanakha, the *Murraya panicelata*; the fragrant paste made from the bark of this tree.
Thanat-wungyi, Director of Ordnance.
Thandawgan, *Thandaw hkan*, a herald.
Thandaw-sin, Equerry.
Thandaw-zin, v. *Thandw-sin*.
Than-leat (*than-lyet*), a two-edged sword.
Thansin, clerk.
Thantaikso, an official of the *Byè-tik*, the Interior.
Thathameda, the household tax.
Thathana-baing, Grand Superior of the Buddhist Order.
Thein, a sacred pavilion.
Thein-su, lands acquired by conquest.
Thenat-ôk, *lit.*, rulers of the guns; a circle official.
Thenat-sa-ye, (military) Adjutant.
Thet-daw-she, *lit.*, long life.
Thidin-hmôn, the red mealy powder that covers the capsules of the *Rottlera tinctoria*.
Thindaing, a smock.
Thin-gan, the Buddhist monk's yellow robe.
Thinganet, the *Hopea odorata*.
Thingyan, the Burmese New Year.
Thinkaya-natin, Convenor of a Synod.
Thin-thenat-bo, provincial official.

Thinthenat-ôk, (military) company-commander.
Thin-thenat-sa-ye, (military) a company clerk.
Thitgaung, forester.
Thit-kauk-saung, *lit.*, bark-blankets.
Thitsi, wood oil.
Thittaw-wun, Conservator of Forests.
Thitya, the *Gordonia Floribunda*.
Thôn-myo Wun, Governor of the Three Districts.
Thudama, the Grand Council of the Buddhist Order.
Thu-gaung, *lit.*, worthy.
Thugyi-cha mye, land within the allotment of the *thugyi*.
Thugyi-paung-mye, mortgage, of land at the disposal of the headman.
Thugyi-sa, *lit.*, *thugyi*-eaten.
Thugyi-yaung-mye, sale of land at the disposal of the headman.
Thu-ngu, an official.
Thunzaing, an official.
Thuyè, a regiment ; *lit.*, brave.
Thwe-thauk-gyi, (military) company-commander ; *lit.*, great blood-drinker.
Tilanka, a fabulous bird.
Tindan yan-hmu, door-keeper.
Trisul, *See* Vol. II, page 400.
Tset-kay (v. *Sikkè*).
Tulut sankyaw, a palace.
Tumsa (K.), seer.
T'u-ssu (C.), the name given by the Chinese to Shan chieftains.
Twinlôn, borings in alluvium.
Twinsa-yo, hereditary oil-well digger.
Twinza, well-digger.
Upasin, friar of the Buddhist Order.
Uyin-hmu, *uyin-ôk*, Manager of the gardens.
Wa, the Buddhist Lent.
Wa:-net-nwe-pyu, bamboos of different species.
Wa-gyut, the close of Lent.
Wat, monastery.
Wa-win, the beginning of Lent.
Waw-lōng, the New Year's feast among the La'hu.
Win, the city wall.
Win-daw-hmu, Captain of the guard of the City Wall.
Win-hmu, Warden of the Entrance.
Wing (*Wying*) (S.), town.
Win-yôn, *lit.*, entrance court.
Wun, *Wun-gyi*, Governor.
Wundauk, Under Secretaries of State.
Wundauk-Mingyi, v. *Wundauk*.
Wunsa, land, the appanage of the District Governor.
Wunsa-ye, Clerk to the Governor.
Wut-mye-wun, Director of Pagoda lands.
Wuttakan, lands appropriated to the upkeep of pagodas.
Yagu, boiled rice, see Vol. II, p. 104.
Ya-the, devotee, ascetic (v. *Rishi*).
Yaza Bolen (*yaza-palin*), throne.
Yazawin, Chronicles.
Yazawindaw, the Royal Chronicles.
Yazawin-gyi, Great Chronicle.
Yazawut, criminal.
Yazawut-ôk, head constable.
Yè, mounted man ; horse-soldier.
Yè-hle, war-boat.
Yè-myein, *lit.*, enjoyers of strife, soldiers.
Ye-nandaw, water palace.
Yè-tagôn, war flag.
Ye-thabin, water festival.
Yeum-daw (*Yôn daw*), court-house.
Yoma, a main range of hills.
Yôn, court.
Yoya, hereditary.
Yuzana, a Burmese measure of length, $13\frac{1}{2}$ English miles.
Ywa-gaung, subordinate village headman.
Ywa-ôk, rural guardian.
Zat, a legend ; an episode in the life of the Buddha.
Zat-pwè, dramatic performance.
Zayat, rest-house.
Zayat-yit, the headman of a village of pagoda slaves.
Zedi, the stupa ; the true pagoda.
Zo (C.), clan.
Zôn-byet, to come to an end.

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